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ABSTRACT

These proceedings of a conference, which focused on technology and communications in tomorrow's workplace, include the following: synopses of "Learning for Life: Increasing Awareness of Human Capabilities" and the follow-up session "Multiplying Intelligence: What Do We Know about Learning Styles?" (Dee Dickinson); "From Programmed Instruction to Laser Videodiscs: What I've Learned after 30 Years at IBM" (Harvey Long); a banquet speech on the space program in relation to education (David Marquart); a session on distance education and its use of telecommunications and video technologies; a session on new skills needed for occupational success (chaired by David Allen); a presentation entitled "Behind the Scenes at the Sheraton" (Helen Moore); a luncheon speech on high tech applications in the news industry (Paul Glancy); five descriptions of programs to prepare students to communicate in the workplace (Bennie Lucroy et al.); a presentation on teaching young people to become decision makers (Owen Thompson); a presentation on the Principles of Technology curriculum (Leno Pedrotti) followed by a panel on the subject; "Technology in the Middle School Years: Whatever Happened to Building Birdhouses in Junior High?" (Sam Stern et al.); "A New Approach to Technology Education, K-12: The Bellevue Model" (Roger Wing et al.); "A New Approach to Technology Education, K-12: The Yakima Model" (Jim Merz); a presentation on the Business Equipment Systems Technology program (Don Wardwell); "Promising Practices for High Risk Youth in the Northwest Region: Initial Search" (Karen Green); "At-Risk Youth: Oregon's Response" (Kent McGuire, moderator); a session on the Summer Training and Employment Program (Kurt Shovlin et al.); a presentation on the Financial Services Academy (Julie

Crossley et al.); "Transition Skills for Youth with Special Needs" (Jane Dowling et al.); a session on career redirection problems, needs, and resources; a demonstration of MICRO-SKILLS (Susan Roudebush); a session on cooperative work experience; "What's New in Apprenticeship?" (Jeff Triplett); a panel on drug testing; an overview of illiteracy in the workplace (Beret Harmon); "Using Vocational Materials to Develop Reading Skills" (Delores Tadlock); a session on integration of academic and vocational education; "Career Planning in the High School: Helping Students Look Ahead" (Dale Arneson, Bruce McKinlay); "How Your Agency Can Test New Materials: A National Effort to Use Products of Research" (Jay Smink); a panel on teacher preparation; "Customized Training Resources: A Blueprint for Expansion and Growth"; a session on regional planning for articulated vocational education programs; a description of Project 2001 (Bob Lehman); "An Insider's Look at Planning for the Future" (Eugene Eschbach); and "Image Building: Lessons for Education and Training from Leading Northwest Companies" (Mark Milleman et al.). The proceedings conclude with a review of the conference and participants' evaluation. (YLB)

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THE Northwest Regional Educational Laboratory

CONFERENCE PROCEEDINGS

WORK

NOW AND IN THE FUTURE

Sheraton Inn–Portland Airport Portland, Oregon November 5-6, 1986

Proceedings from the third annual conference for business and industry representatives, educators and others concerned with the changing world of work

Prepared by:

Education and Work Program
Larry McClure, Director

U.S. DEPARTMENT OF EDUCATION
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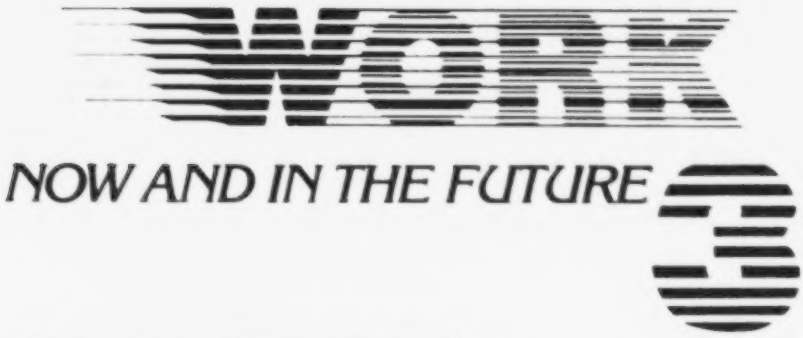

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WORK
NOW AND IN THE FUTURE 3

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For a copy of names and addresses of participants, presenters, and panel members, please contact Dr. Larry McClure, NWREL (inside Oregon, 248-6800; outside Oregon, 1-800-547-6339).

Third Annual Conference Focuses on Technology and Communication in Tomorrow's Workplace

The Northwest Regional Educational Laboratory (NWREL) and its cosponsoring agencies welcomed 457 people from education, business, industry and public service to the "Work Now and in the Future-3" conference held in Portland, Oregon on November 5 and 6, 1986. Participants from the region were joined by others outside the Northwest to learn and share ideas.

> **"Are our machines making us more human? Or more like machines?"**

Like its 1984 and 1985 predecessors, this conference brought together practitioners and policymakers from education and the private sector to discuss trends in the world of work and the educational implications of these trends. With the general areas of technology and communications as this year's overarching themes, presenters and participants focused on questions such as "What will the world of tomorrow be like? What kinds of employment will people have? And what educational preparation will today's students need to be successful in tomorrow's world?"

"Are our machines making us more human? Or more like machines?" These questions, posed in introductory materials provided to participants, received some tentative answers during the conference. These include the futurists' assertion that technology is stimulating a reaction of increased humanism and private sector claims that tomorrow's workplace will demand skills machines can never equal.

> **The sessions covered topics from learning potential to technology education to drug abuse.**

The 40 conference speakers and sessions covered topics from human learning potential to technology education to drug abuse in the workplace. Of special interest were subjects such as (1) how agencies are working together to attack unemployment and other productivity issues; (2) how vocational and employment training programs are changing; (3) how communication is changing in the automated workplace; (4) what is being done to help minority, disadvantaged and handicapped young people succeed in school and in the marketplace; (5) how knowledge of learning styles can help educators and trainers work with learners more effectively; and (6) how programs are helping adults face career changes.

Ideas and information on these and related topics were plentiful and widely shared during the conference. Just as important, participants had the opportunity to begin or extend network building for continued sharing and support.

Both formal and anecdotal evaluation data (see related article) indicate that Work Now and in the Future-3 was informative and useful and that participants look forward to expanding their knowledge and their networks by attending next year's conference.

In addition to NWREL, cosponsors included the Education Commission of the States, The National Alliance for Business, and the National Center for Research in Vocational Education. Another 24 cooperating organizations helped plan and support the conference in various ways.

Participants Have Varied Backgrounds

Work Now and in the Future-3 was attended by 457 educators, business people and others from 12 states and the District of Columbia.

Within the NWREL region attendance was as follows: Alaska-3, Hawaii-3, Idaho-6, Montana-7, Oregon-211, and Washington-217. Eight people from outside the region participated in the conference.

Thirty-four percent of the attendees were public school teachers. Other professional roles represented were: school administrators-7 percent, school counselors-8 percent, district office administrators and staff-14 percent, postsecondary instructors-11 percent, postsecondary administrators-5 percent, state education agency staff-4 percent, vocational/technical school administrators and staff-5 percent, and business and industry representatives-9 percent. Representatives from

state agencies other than SEA's, educational research and development agency staff, education service district staff, school board members, social service agency staff, professional association representatives, city employees, union representatives and consortium members each accounted for less than one percent of the participant group.

Keynote Speaker Dee Dickinson Urges Awareness of "Multiple Intelligences"

Dee Dickinson, Coordinator of the Seattle-based network, New Horizons for Learning, shared with participants an exciting vision of the untapped learning potential within us. Her presentation, titled "Learning for Life: Increasing Awareness of Human Capabilities" called upon participants to expand their views of learning in schools and in the workplace.

The brain and its powers are much more flexible than was previously believed.

Dickinson guided participants through experiential exercises, and then spoke of the changing nature of the world and its workers. Dickinson cited: (1) the increasingly complex and rapidly changing world around us; (2) a shift from authority-oriented to participative management; (3) the growth of a highly diverse work force; (4) a growing need for people to experiment, take risks and regard mistakes as learning experiences rather than failures; and (5) an increased need for better work incentives. These factors underscore the importance of developing our learning capacities to the fullest.

Dickinson's research led her to a study by Proctor and Gamble in which the three most needed skills for the worker of the future, beyond basic verbal and computing skills, were cited as being (1) a positive attitude, (2) the ability to work cooperatively with others, and (3) the ability to work responsibly without supervision.

Within this context of global circumstances and needs, Dickinson gave participants a brief overview of the work of five researchers whose findings point to new ways of preparing people for the demands of tomorrow's world.

Brain researcher Marian Diamond has found that it is possible for the brain and its functions to develop and change. In contrast to older models of intelligence as relatively fixed and unchanging, Diamond's finding is that new neural connections can be made within the brain in the presence of a positive, stimulating environment and healthy cardiovascular and pulmonary systems.

Israeli cognitive psychologist, Reuben Feuerstein, has also found that changes in intellectual level are possible. Through a process Feuerstein has developed known as instrumental enrichment, cognitive deficiencies can be corrected and intellectual capacity expanded.

David Perkins of Harvard's "Project Zero" has put forth evidence that learning content (what we learn) should not be the sole focus in educational settings. Instead, we need to focus as well on power (learning ability) and strategy (how we learn), because these are amenable to changes which can enhance learning.

The world of work is a world of learning. People have the right to "learn how to learn."

Frames of Mind author, Howard Gardner, has developed a theory of multiple intelligences, which takes the concept of intelligence far beyond the verbal and logical/mathematical areas normally concentrated on and rewarded in school settings. In Gardner's view, we need to honor and teach to our other kinds of intelligence: the visual/spatial, kinesthetic, musical, interpersonal and intrapersonal (thinking about thinking) intelligences.

Yale University's Robert Sternberg has advanced a triarchic theory of intelligence. Humans possess componential intelligence--the verbal and logical/mathematical areas with which we are most familiar. But we also have contextual intelligence, which refers to creativity, the ability to imagine new possibilities, etc.; and experiential intelligence, which leads people to see solutions to social or mechanical problems.

What happens when our "multiple intelligences" are stimulated and nurtured? Dickinson gave several examples that corroborate the findings of the researchers.

We have several other kinds of intelligence besides the verbal and logical/mathematical.

In closing, Dickinson reminded listeners that the world of work is a world of learning. With the introduction of many new technologies into the workplace and the fact that the average person changes jobs six or seven times in a lifetime, Dickinson underscored the point that people deserve the opportunity to learn how to learn.

Research and Successful Projects Validate Nontraditional Teaching and Learning Methods

New Horizons for Learning coordinator, Dee Dickinson, offered session participants information and experiential exercises regarding the "multiple intelligences" research she discussed earlier in her keynote presentation. This follow-up session, "Multiplying Intelligence: What Do We Know About Learning Styles?" focused largely on the work of Dr. Howard Gardner, author of Frames of Mind.

Creative people use all their senses to experience and learn, and they focus on learning processes as well as outcomes.

Dickinson noted that the intellectual functions taught and validated by schools fall far short of the kinds of experience and training found in the backgrounds of highly creative people. She reviewed studies which revealed that these people have certain things in common that appear related to their creative abilities: they tend to use all their sense modalities in experiencing and learning, and they are more likely than the average person to have been taught to experience entire processes--to go through processes from beginning to end. When Margaret Mead wanted a sweater, for example, her mother taught her to card the wool, spin the yarn, and learn to knit.

Discussion of the various "intelligences" identified by Howard Gardner began with a focus on visual/spatial intelligence. Dickinson cited the work of French graphic artist, Jacob Agam, whose ideas have been successfully implemented in European preschool programs. In his instructional program young children learn "circleness," then generalize to recognizing circular shapes in the world, then draw circles, etc.

Rene Fuller of Stonybrook, New York has developed a visual-spatial approach to reading called Ball-Stick-Bird, which uses word-pictures to teach dyslexic children to read. The approach has also proved effective in teaching reading skills to the retarded.

Dickinson went on to discuss the concept and practice of "mind mapping." Users of mind mapping techniques are encouraged to suspend critical thinking, be messy, and tolerate the presence of silly and irrelevant material on the way to determining what is creative and useful. Participants were taken through a mind mapping exercise, followed by sharing and discussion of products.

In most educational environments, the older a student is, the less opportunity he or she has to experience multisensory learning.

Body-kinesthetic intelligence is often expressed together with visual-spatial activities, as when athletes focus visually on a point to be reached or distance to be achieved. Dickinson spoke of other relationships between this and other modalities, pointing out that learning is most effective when there are breaks every 50-60 minutes for physical movement. Physical movement opens the flow of blood to the brain and provides some time for the subconscious processing of what has just been learned. An example is having foreign language learners move as the words for movement are being taught. This causes the new learning to be encoded in the muscular system, as well as introduced into the brain.

Closely related is the appeal to our musical intelligence represented by playing music in environments where learning is to take place. Dickinson shared her view that such applications

should be expanded. Unfortunately, within education today, the older the student is, the less opportunity he or she has to experience multisensory learning.

Dickinson cited experimentation in the area of interpersonal intelligence, which has shown this to be a powerful learning and problem solving approach. At both Johns Hopkins University and the University of Minnesota, cooperative learning activities have been set up and studied. In addition to effective problem solving, cooperative learning also fosters an understanding of the strengths and limitations of one's own learning style and those of other people.

> **"Teachers need to ask the question and then shut up".**

Intrapersonal intelligence focuses on the internal processes involved in creativity and problem solving. Unfortunately, according to Dickinson, the experience of process is often short-circuited in educational settings by hurrying to find the "right" answer. Once this "right" answer is given, the student stops searching. We need, says Dickinson, to ask questions to which we do not know the answer. To foster intrapersonal intelligence, "teachers need to ask the question and then shut up."

Scientist Offers Views on the Promises, Limitations of Technology in Future

"From Programmed Instruction to Laser Videodiscs: What I've Learned After 30 Years at IBM"--this was the Wednesday luncheon speech of scientist-educator, Harvey S. Long. Long's experience with IBM has included key roles as a mathematician and manager of instructional systems. He refers to himself as a pragmatic optimist. Long is the developer of this country's largest computer-based instructional facility. He is currently working as a consultant on the industrial applications of technology, especially as it relates to education.

Long's humorous and light-hearted presentation served to bridge the present with the future, as he offered his opinions about education, technology, and the world of work. He noted that in 1958, one year after the introduction of behaviorism in this country, he wrote the first computer program at IBM. Noted Long, "the system was created for the purpose of delivering instruction one small piece at a time." Yet serious questions were raised as to why change just didn't happen.

> **"Just because you can make technology and prove it works, doesn't mean it can be put into practice."**

In 1965, the first "user unfriendly" terminal was created, again raising concerns about change. "Just because you can make technology and prove it works, doesn't mean it can be put into practice," Long cautioned. As an example, he talked about the myth of the paperless office: "Today, micros put out enough paper in one day to circumvent the globe 40 times."

The trick of technology, Long explained, is to make it relevant to the world of work: "Eighty-five percent of all jobs are indirectly related to computers." The purpose for using technology in the workplace is efficiency. Yet less than five percent of all jobs in the future will require high-tech skills and knowledge. What employers want, said Long, echoing a point made by keynote speaker Dee Dickinson, are people who can acquire information, analyze it, communicate it, and are able to work alone.

"Evolve or dissolve," Long admonished technology manufacturers. If you manufacture something nobody wants, you must diversify. For example, 98 percent of all homes today have a television set. In the future, televisions will also function as computers. Thirty-five percent of all homes now have video cassette recorders; in the future, this figure will skyrocket to 80 percent. What this means is that computers will reallocate time. Computers in schools are already reallocating time, and whether this is good or bad is yet to be determined.

Technology in the workplace and in the schools will not, in and of itself, solve problems. Technology will even create some problems. For example, compact audio disc technology is

negatively affecting home music lessons. The point here, Long explained, is that new technology must take into careful consideration how change is effected.

> **"For technology to work in the future, it must represent good business, it must be profitable, and it must be socially responsible."**

The schools of the future, in Long's opinion, will focus on the information-centered classroom. A key job requirement of work in the future will be the ability to make decisions with incomplete information. What technology does in the workplace of the future is make information available at the fingertips. To prepare for the future, schools will need to answer the following questions about technology: (1) How will technology reallocate the faculty's time? (2) What is the purpose of schooling? (3) Does technology help or hinder the faculty? and (4) Does the technology work?

In the past, access to technology has been too limited, usually 40 to 60 individuals per terminal. For technology to work in the future, it must represent good business, it must be profitable, and it must be socially responsible. Long concluded by noting that a new day is dawning for the promise of technology if it is made relevant to both schools and the marketplace: "Remember, machines can do most of what people can do, but people can do many things better. So let people do the things they do best."

Teacher in Space Finalist Sees Bright Future for U.S. Space Program

Vocational educator and Teacher in Space finalist, David Marquart, was the featured speaker at the Oregon Council of Career and Vocational Administrators' Wednesday evening banquet. In his second year on leave with NASA's Teacher in Space project, Marquart spoke about the space program in relation to education and to other futurist projects.

Marquart referred to the Challenger space shuttle accident in January, 1986, and spoke of the sadness and disappointment experienced by the nation as a whole, by NASA personnel, and by himself, since he was personally acquainted with the Challenger crew members.

> **The national mood is very positive toward the space program.**

In his travels for NASA since the accident, however, Marquart finds the national mood is very positive toward the space program, including the Teacher in Space project. Remarking that "the future does not wait," Marquart spoke of the need to be forward-looking and to carry on with the space program, despite disappointment and setbacks. He said he hopes to be present to watch the launching of the Discoverer shuttle in February 1988.

Marquart then turned his attention to a need he perceives for closer connections between the world of education and the world of work. He said he would like to see more projects which bring teachers into the marketplace so that they can become more familiar with the situations their students will encounter. "If we want business to become more involved in education", Marquart claims, "we need educators to become more involved in business." He also spoke of the success of projects which involve business people coming into the classroom to observe and teach, and he encouraged his listeners to promote similar projects.

Stressing the value of work experience, Marquart talked about the need for business people to bring in student learners in order to teach them--not merely to use them for labor. He also invited listeners to encourage local media to give more positive attention to students' achievements.

During a question and answer session, those in attendance expressed interest in Marquart's experiences as a Teacher in Space project participant. Many of his responses focused on the unique experience of weightlessness and the special equipment needed to function in a weightless environment. He mentioned that the U.S. is behind the Soviet Union in microgravity research and that our activities need to be stepped up.

Responding to questions about the Teacher in Space project, Marquart said that the next teacher to fly aboard a shuttle will be Idaho's Barbara Morgan, but that she is not scheduled to be aboard the next shuttle flight. Asked how his NASA experience will affect his teaching, Marquart responded that he will make much greater use of community resources. In response to a query about U.S.-U.S.S.R. collaboration on space projects, Marquart noted that some collaboration has taken place and more is scheduled, including an astronaut-cosmonaut exchange program.

Marquart's presentation concluded with a slide show and commentary. Featured were slides depicting the experience of weightlessness, Marquart's association with the Challenger astronauts, and the structure and function of different parts of the shuttle craft. Noted Marquart in closing, "the future is very, very bright for the space program."

Distance Education Joins People Separated by Time and Space

Using telecommunications and video technologies to involve educators and learners at multiple sites was the focus of this session. Presenters described models of distance education currently used in secondary and postsecondary education projects.

Anne Batey, Computer Education Specialist at Northwest Regional Educational Laboratory (NWREL), provided participants with a general overview of distance education: what it is, what it can do, how it is delivered and some of the issues associated with its use. Batey defined distance education as: "Formally planned instruction which occurs when the learner is separated from the instruction and/or materials by distance or time."

Four types of delivery options for distance education were noted: (1) print-based media (e.g., workbooks, test packets); (2) audio-based media (e.g., audiotapes, telephone, satellite); (3) video-based media (e.g., full-power broadcast, cable); and (4) computer/data communications-based media (e.g., computers, software).

Advantages of distance education were noted. It can provide access to subject matter experts or career role models not available in local communities. Interactive technologies allow students an opportunity to listen to and question individuals located anywhere in the world. Distance education can also provide increased access to data and instructional resources. For example, a distance education system can receive and temporarily store instructional programming on video cassettes and avoid the long-term rights fees and storage costs of a large video library. Another advantage of having a distance education system in place is that it can successfully promote increased school/community linkages.

Some of the issues associated with the use of distance education noted by the presenters include costs, funding, certification, accreditation, management and evaluation.

Ellen Halseth, a high school English teacher in the Jefferson School District, Jefferson, Oregon, described a distance education project for which she serves as master teacher. In the program secondary students from four rural schools are taught creative writing. The project system links schools in rural locations and allows classes to be taught from one building to students in four buildings, thus overcoming the limitations of small schools and small staffs.

High school project participants share ideas, workload, and a class that might not otherwise have been held.

Each of the schools in the project has six computers and disk drives, two printers and a modem. In addition, a local community college has a computer and a modem and an electronic bulletin board. The curriculum focuses on the development of basic fiction writing techniques. Each student completes assignments and submits them through the bulletin board, where the master teacher and other students can read and comment on them.

The project enables students and teachers separated by distance to share ideas, the workload, and a class that might not otherwise have been held. Moreover, the class was ideal

for the concept of process writing, using the bulletin board as a method of publication. Halseth noted that there have been some difficulties in operating the project, and that these have to do with joint management and school support.

Beyond Automation: New Skills Needed for Occupational Success

David Allen, Coordinator of the Occupational Program Planning System, Oregon Employment Division, opened the session by noting the fact that Oregon is short 36,000 jobs, 13,000 of which are in the timber and wood products industry. Some of the layoffs in this industry are due to automation. He said that construction is down 23,000 jobs. Meanwhile, increases have taken place in health services, with 13,900 more jobs projected for 1987 than in 1979, and business services with 14,700 new jobs during this same time period. Professional/ technical jobs are up by 18,000 since 1979, according to Allen, but craft worker jobs are down by the same number. Skilled labor jobs, which are affected by automation, are down by 14,000.

Panel members noted that an ongoing problem with vocational education is that it has been based on training craft workers, not people who analyze and use critical thinking processes. Moreover, it has been set up so as to have a terminal point, not to explore ways to expand roles. Articulation between the community college and the high school is not bad, but problems exist in communication with four-year institutions.

McGee "If we do not change direction, we are likely to end up where we are headed."

Plant Manager Larry McGee has set up a Pittsburgh Plate Glass (PPG) state-of-the-art manufacturing facility in Chehalis, Washington using an innovative work-team approach. Because education is not producing people to work in this kind of environment, PPG had to interview 3,800 people to hire 70. Even so, said McGee, they have to do a great deal of training in areas such as interpersonal relations. They expect to do much of the technical training on site after people are hired. They are mainly interested in hiring people who can work well with others and be self-directed. McGee feels strongly that secondary schools need to prepare people for this kind of work setting. He quoted a Chinese proverb: "If we do not change direction, we are likely to end up where we are headed."

Phil Westover from A-Dec, Inc., a dental equipment manufacturing company in Newberg, Oregon, strongly supported McGee's statements. When A-Dec gave employees more decision making power over production and quality control, both improved considerably. Westover, too, noted that schools are not preparing people to work in a world of constant change or to understand the realities of industry, e.g., productivity. Westover feels that students need educational preparation which will enable them to be team oriented, to adapt to change, and to assess situations and make decisions.

"Cook's Tour" Goes Behind Scenes to Review Hotel Industry Careers

What does it take to run a large hotel? What kinds of people and skills are needed to make this a successful enterprise? Helen Moore, Director of Sales at the Sheraton Inn--our conference site--provided answers to these questions during the "Behind the Scenes at the Sheraton" presentation.

Nearly 80 thousand people are employed in the hospitality industry in Oregon.

Moore pointed out that there are nearly 80 thousand people employed in the hospitality business in the State of Oregon, making it one of the state's top three industries. The industry generates millions of tax dollars each year through hotel and gas taxes and other avenues.

Session participants were taken on a tour of the hotel's various departments to observe operations and talk with the department heads. They spoke with the manager of the kitchen, who hires and supervises the food preparation staff; the food and beverage manager, who hires and supervises food service staff; the housekeeping

manager, who is in charge of the housekeeping and laundry functions; and the accounting, sales and front desk managers.

These managers described the activities of their departments and the skills and traits required of their employees. Since the hotel business functions 24 hours a day every day of the year, all department heads emphasized that employees must be dependable, willing to work hard, and flexible.

Moore indicated a willingness to be contacted if more information is needed or if groups wish to have a speaker on the topic of hotel management and operations.

USA TODAY Speaker Describes High-Tech Applications, Services in News Industry

Luncheon speaker Paul Glancy, Manager of Educational Services at USA TODAY, provided conference participants with an exciting picture of how USA TODAY uses current technology to deliver the nation's first nationally distributed daily newspaper, while at the same time providing educational services to teachers and students across the country.

USA TODAY has revolutionized newspaper design with its advanced use of graphic arts.

Glancy wove the various conference themes, such as science and technology in the workplace, communications and technology education, into a discussion of the technology used to produce USA TODAY. He presented a video which depicted how USA TODAY is produced daily. Nationwide early morning availability is made possible by a sophisticated procedure based on a set of high-tech tools. The primary tool is a satellite, which serves as a repository for each day's typography: articles, graphics, layouts. The newspaper is first created and laid out in USA TODAY's Washington, DC headquarters. There, it is translated into a computerized version, transmitted to the satellite, and beamed to multiple print sites where it is translated back to the printed pages of the newspaper. All this takes place in about eight hours and makes it possible for USA TODAY to hit the newsstands as early as any local morning paper.

The film highlighted the fact that USA TODAY has revolutionized newspaper design with its generous use of color, charts and drawings. Among the graphics seen in USA TODAY are maps, snapshots and painted news portraits. The newspaper is particularly innovative in its use of interpretive drawings such as the sequence of events leading up to an airplane hijacking or the complex anatomy of a tornado.

The presentation further emphasized how USA TODAY has set the standard for newspaper color photography. Many newspapers that rarely used color photographs previously now use them regularly. At USA TODAY, sophisticated computer equipment can receive photographs transmitted electronically from distant sites, enabling the publication to use photos without actually having the film on hand. The same equipment can also enhance the technical quality of photos.

The advertising might of USA TODAY was highlighted. The most widely read newspaper in the nation, USA TODAY is able to give advertisers quality demographics, excellent color and national coverage, reaching readers coast to coast in major USA markets.

Glancy went on to speak of several new educational services available to classroom teachers. Through its education program, Classline, USA TODAY fosters newspaper reading which in turn promotes news awareness and the development of a lifetime reading habit among youth.

Some examples of curriculum materials for teachers and students available through participation in the Classline program are:

- An on-line collection of suggested learning activities designed around that morning's newspaper, help build thinking and writing skills while studying content area concepts through news items in USA TODAY.

- A collection of suggested lesson plans and student worksheets in Language Arts/Reading for students of all ages and abilities. Ideas in this program focus on the implementation of current teaching techniques to build vocabulary as well as reading comprehension, thinking and study skills.

- An Economics Today program for students of all ages. Using the suggested lesson plans and student worksheets developed in conjunction with the Foundation for Teaching Economics, teachers help students to gain a better understanding of the economics of our world from relevant USA TODAY articles.

- A new program in science and math still being tested in several locations across the country.

New Programs Prepare Students to Communicate in Workplace

Five presenters discussed the communication skills required for success in today's workplace and shared their ideas on communication trends in schools and training programs across the country. Bennie Lucroy, representative of the Agency for Instructional Technology, Bloomington, Indiana, described an "applied communications" curriculum which is currently under development for high school vocational students. This curriculum is based on the convictions that: (1) academic and vocational skills can be integrated and thus reinforce each other; (2) applied communication skills need to be incorporated into all vocational education programs; and (3) communication skills in a vocational program should encompass the overall vocational goal--to prepare students for the workplace.

This communications project assumes that effective learning begins with familiar situations and that skills are best learned in situations similar to those in which they will be applied. It is oriented toward using communication skills to solve problems in the workplace, and is designed to be as free as possible of biases and stereotypes. Learning materials include unit modules with video programs and printed materials for the teacher and students.

Matulich: The three C's--communication, creativity and culture--are ingredients in effective technical writing.

Loretta Matulich, English instructor at Clackamas Community College in Oregon City, Oregon, provided a discussion on the influence of literature and American studies on technical writing in the community college. Her presentation focused on "the three C's": communication, creativity and culture.

Communication is deemed effective in the technical writing classroom if writers can convey information so that other students can understand it. Creativity in technical writing is supported and carried out by logic and practicality. One of the types of technical reports students are asked to prepare involves describing a specific floor plan, policy, or advertising idea and then showing creative, logical and practical steps to implement an improvement. The third "C" represents culture. Two themes run through the American culture--the Puritan conscience and the American dream. Matulich suggested that it is this sense of the American dream that makes it possible for teachers to ask for and get creative and practical suggestions from students.

Claudia Jensen, a business specialist with the Oregon Department of Education, highlighted a communications project called The Automated Office, which is being carried out in collaboration with NWREL. The objectives of the project are to:

- Familiarize secondary teachers with emerging communication technologies in the automated office and the skills and knowledge employees need to communicate effectively in those settings.

- Help educators upgrade their business computer labs to establish networking capabilities among workstations for electronic mail, document exchange, telecommunications and other related automated office functions.

- Work with teachers to establish a simulated business and office environment that will enable students to develop and use communication skills in a realistic context.

- Adapt and integrate curriculum components to the upgraded lab and simulated business environment.

A number of schools in the Portland metropolitan area will serve as pilot sites for the Automated Office project during the 1986-87 school year. A regional demonstration is planned for the 1987-1988 school year that will involve three to four additional schools from each state in the Northwest Region.

David Marquart of NASA's Teacher in Space Program described a computer-based electronic bulletin board which provides teachers and students information on space education. Applications are used for teaching all subjects from reading to mathematics. Curriculum guides and lessons are available to subscribing schools. The use of this service requires that the school purchase a modem for remote telephone access. The cost of the service includes a start-up fee, and users are billed according to the amount of time they are connected to the computer system.

A recent survey of people in the communications field revealed that biases against women still persist.

Jeannie Dodson-Edgars, Chandler Public Relations, Portland, Oregon, provided listeners with a view of communications from a nontechnical perspective. Her discussion focused on the progress of women in the field of communications, with data drawn from a recent survey of men and women in communications.

Salary statistics collected in the survey indicated that women in all age groups were paid considerably lower on the average than their male counterparts, even though a similar percentage of men and women were responsible for decision and policy making. The opinions gathered in the survey often reflected sex bias against women. Dodson-Edgars suggested that educators can affect the future of women in communications and can help to create equality between men and women in general by such techniques as: (1) eliminating the use of sex-bias language in the classroom, (2) inviting women and minorities as guest speakers, and (3) establishing equality in male and female sports.

Scientist Advocates Teaching Young People to Become Decision Makers

Owen Thompson, University of Maryland professor and Director of Education for the University Corporation for Atmospheric Research, invited participants to join him in considering what young people will need to know to be successful in tomorrow's world of work. Thompson focused on the decision making processes, since decision making is a common denominator--something we all need to engage in regardless of the particular career path we take. Unfortunately, in Thompson's view, the educational process often fails to prepare students to be good decision makers.

Ideally, Thompson said, decision making should proceed from a combination of prior knowledge and the application of rational processes. In reality, however, decision making is often far less systematic than this.

Thompson reviewed with participants the processes of deduction and induction, giving examples of their application to scientific, social and personal issues. He spoke of the ways that logic often breaks down when making decisions in areas outside the sciences. One example given was the case of a young person who concludes, on the basis of knowing one pot smoker who has never had a traffic accident or ticket, that pot smoking doesn't negatively affect people's driving.

Contending that the field of meteorology provides a good context for young people to learn principles of mathematics, Thompson went on to give examples from meteorology to illustrate various modes of information gathering and decision management.

Thompson cited steps in the decision management process, giving examples from such diverse areas as meteorology and drug use/abuse. We need, he said, to ask: (1) how many decision options are there? (2) what are the consequences of each decision option? (3) is there a chain of consequences proceeding from each decision option? (4) are there particular sensitivities associated with a given decision option?

> "Decision making and decision management should be a fundamental focus of virtually every class we teach."

In Thompson's view, "the process of making good decisions is a far more difficult process to learn than the process of merely gathering information." Unfortunately, he said, gathering and managing information have been given a great deal of attention in educational settings, while decision management has been given very little attention. Too often decision making gets relegated to the playground and the street corner, where peer pressure is often a far stronger force than logic or reason.

The principles of good decision making are the same in all endeavors, contends Thompson, who went on to say, "I would argue that decision development and decision management should be a fundamental focus of virtually every class we teach."

Principles of Technology Offers Glimpse into Future of Curriculum

Leno Pedrotti, physicist and member of the Principles of Technology (PT) development team at the Center for Occupational Research and Development in Waco, Texas, presented a dilemma to his audience: If we increase requirements for math and science for high school students, and if students are to meet those requirements by enrolling in currently available math and science courses, then we risk the failure of large numbers of students and the loss of many math and science teachers.

Pedrotti's solution to this dilemma is to develop alternative courses in math and science--such as PT--that address the needs of noncollege-bound students and guarantee reasonable odds of student success.

Pedrotti emphasized the need for noncollege-bound students to be trained in science and math. He said that only one of 11 students in American high schools take physics courses, while half of the students in other industrialized nations are enrolled in high school physics.

> "For every scientist in the country, there's a need for a technician."

The doors to math and science slam shut for many students by the seventh grade, according to Pedrotti. For the most part, teachers have been unable to persuade these students to have faith in their abilities and keep on trying. "Students have a right to fail--for awhile. When they do succeed, nothing succeeds like success."

> There will be more technological change between the years 1983 and 2000 than in all prior history.

"For every scientist in the country, there's a need for a technician," said Pedrotti. "We need systems technicians." Specifically, technicians are needed in high-tech areas related to computers, telecommunications, computer-aided design, robotics/automated systems, computer numerical control, building equipment management/maintenance, nondestructive testing, instrumentation and control, lasers, energy conservation and use, biomedical instrumentation and automotive technology. Pedrotti cited the projection of one futurist who claims that there will be more technological change between 1983 and 2000 than in all prior history.

Advanced technologies, according to Pedrotti, are characterized by six features: (1) They operate at the technical frontiers (e.g., gene splicing, lasers, star wars); (2) they overlap several engineering areas (e.g., mechanical, electrical, chemical, etc.): (3) they involve computers; (4) they change rapidly; (5) they result in systems-oriented products; and (6) they require knowledge of <u>why</u> as well as <u>how</u>.

The PT program is a two-year applied science (physics) course for secondary vocational education students. It is based upon an

integrated instructional package that includes video and print materials and laboratories. Half the course concentrates on problem solving math labs and hands-on hardware labs.

Although both traditional high school physics class and the PT curriculum cover the same principles (mechanics, heat, sound, electricity, light and modern physics), Pedrotti noted that most traditional high school physics coursework targets college-bound students, while PT targets noncollege-bound students. Another significant difference is that physics emphasizes the proof of principles, while PT emphasizes their application. If PT students were present, said Pedrotti, they would say, "Don't prove it to me. Tell me how to use it."

Broad Support Evident for Applied Science for Non-College Bound

The Principles of Technology (PT) program was explored further in this two-hour question and answer session. Leno Pedrotti of the Center for Occupational Research and Development in Waco, Texas; and Tim King and Bob Thompson, two Oregon physics teachers using the PT curriculum, made up the panel.

King and Thompson related their experiences as teachers of the PT program. While experiencing some initial difficulties in obtaining equipment for the course, they were enthusiastic about its ultimate operation. Thompson noted that all of the juniors who took the course during the 1985-86 school year signed up for the second year. Of King's 28 students, he said that "all but one are having a great time."

> **"It is the wisdom of teachers that makes this thing work."**

Initial questions concerned costs. Pedrotti said that the cost to run the two-year program with three students at each of five lab stations--and assuming that the school had no equipment at all--would be $30-$32,000.

Pedrotti stressed that schools must begin early if they plan to implement the program. Plans should be under way by February 1987 to have the program in place by September 1987. First, schools should solicit financial support for the program from industry. Second, schools should engage in an active public relations campaign to educate parents and the school board about the PT option. Third, counselors need to be informed that PT is a pre-technology track leading to community college. Pedrotti cautioned that counselors should not let the PT class become a dumping ground for students with behavioral problems. Fourth, equipment needs to be ordered early. Fifth, in June or July, a four-week inservice should be held for teachers. "It is the wisdom of teachers that makes this thing work," said Pedrotti.

> **Schools are encouraged to recruit young women for the PT program**

Since fewer young women have enrolled in PT classes than young men, the panelists urged schools to recruit young women.

One participant asked if PT was being taught as a science class or a vocational education class. The response was that it is being taught as "a viable course for science or applied physics." In Oregon, science credit is given for Principles of Technology. In some states it has been team taught with vocational teachers and math or science teachers.

A question was asked about prerequisite math courses. Algebra is not required of PT students either before or concurrently. Pedrotti noted that, "the strength of the program is that it repeats." Students who do not understand a concept the first time will have subsequent opportunities to master it.

A telecommunications link was established with rural educators and students using PT in North Carolina. Conference participants asked questions and the rural educators and students shared their experiences and praised the PT curriculum. In this model, the PT teacher moves periodically in a mobile van to remote high schools while "beaming" the course to students in other participating schools. An electronic chalkboard and computer are also used in this two-way audio version of distance education.

Participants also learned that program students are showing impressive math and science achievement and that those interested in acquiring preview materials may call the Center for Occupational R&D at 1-800-231-3015, or the Agency for Instructional Technology in Indiana at 1-800-457-4509.

State contacts in the NWREL region include:

Alaska: Gary Fuller or Kelly Tonsmeire (907) 465-2884
Hawaii: Dr. Larry Inaba (808) 948-7461
Idaho: Don Taylor (208) 334-3229
Montana: Jeffrey Wulf (406) 444-4452
Oregon: Ron Jantzi (503) 378-3594
Washington: Jan Carlson (206) 753-1066

Reality-Based Student Projects Key to Idaho Teachers' Classes

The development of technology education has been a gradual evolution. Nineteen of the state industrial arts associations have changed their names to reflect technology education and increased linkages between industrial arts/technology education and math and science.

These and other changes were discussed in the session, "Technology in the Middle School Years: Whatever Happened to Building Birdhouses in Junior High?" Panelists were Sam Stern of Oregon State University in Corvallis, Sam Porter of Western Washington University in Bellingham, and Terry and Brad Thode of Wood River Junior High School in Hailey, Idaho.

Many see technology education as the basis from which collaboration with other school subjects can occur, and it is from this premise that Terry and Brad Thode have created innovative projects for their students. Using the four-cluster approach--building construction, graphic communication, transportation, and power--they have developed an array of program materials.

> Lessons use such resources as robotics, lasers and satellite receiving disks.

Activities deal with computers, consumer awareness and career information, in addition to specific learning outcomes. Lessons use such resources as robotics, lasers and satellite receiving disks. Student projects have included renovating an old industrial arts shop to accommodate the new technologies and publishing the school's yearbook in its entirety, realizing the profits and investing them in additional equipment for the program. (Sample learning activities and a program overview developed in Hailey are available from NWREL.)

Bellevue Technology Education Offers Broad Exposure to Skills

Industrial Arts is changing in Bellevue, Washington schools. This was the theme of "A New Approach to Technology Education, K-12: The Bellevue Model." Technology Education is now replacing Industrial Arts, and the emphasis is "process rather than product."

> Students learn about America's industries and how they affect our personal lives.

According to presenters Roger Wing, Jack McLeod and Carl Schmidt, technology education is a "comprehensive, action-based educational program to acquaint all persons with their technological environment so they can make rational decisions about their own lives on a day-to-day basis and participate in controlling their own destiny." Technology Education students learn about America's industries and about the personal, technological and environmental effects of these industries.

Two main areas of emphasis in this process-oriented technology program are (1) cooperative learning (group work), and (2) hands-on experience. In the middle schools it begins with exploratory and beginning activities in power/energy/transportation, construction/manufacturing, and communication. The program continues at the high school level with power technology, electronics, wood construction technology, metals and plastics technology, engineering drafting, and communications technology as vocationally approved courses of study.

As part of their effort to build a strong foundation for Technology Education, district administration and faculty members have produced a program guide titled Technology Education in Bellevue Public Schools. This guide contains sections on philosophy and goals, curriculum, personnel, facilities/equipment, inservice, program management, safety, and references.

An example from the personnel section is a job description for technology teachers highlighting three required areas of expertise: safety, program management, and instruction; and specific competencies within each of these areas are stated.

Yakima Techology Education Model Retools Outdated Industrial Arts

Turning a traditional industrial arts program into a technology-oriented program can be challenging and rewarding. This was the main message of "A New Approach to Technology Education, K-12: The Yakima Model." Jim Merz from the Yakima School District discussed the problems and processes involved in developing a sixth and seventh grade technology education program and explained how it is working in the Yakima schools.

Transportation, communication, construction and manufacturing are explored by sixth and seventh graders.

First, program planners identified elements which would be retained from the original program. Then, following and adapting the New York System technology education program, they created four basic areas: transportation, communication, construction, and manufacturing. They also duplicated the Technical Learning Activity (TLA) feature of the New York Program.

Yakima's Technology Education program is delivered in small pieces over nine weeks on an exploratory, rotational basis. The first week is reserved for instruction and the last week for testing. In weeks two through nine, the students are learning: (1) computers, (2) Legos, (3) robotics, (4) research (library work), (5) flight, (6) rocketry, and (7) electronics. Program classes are 42 minutes in length.

Every Monday is lecture day, including ten minutes or less of lecture with demonstrations, and quizzes. Tuesday is a TLA day, during which two partners work together. Wednesday features slides, films, video, or speakers. Thursday and Friday are project days. These are similar to TLA days, except that they are devoted to a large-scale project which lasts all quarter.

Students and teachers alike are enthusiastic about the new program, and staff are continuing to refine and improve it.

Equipment Servicing Program Operates as Actual Business

The "learn-do-teach" approach to developing technical competence is at the heart of the Business Equipment Systems Technology (BEST) program at Mt. Hood Community College in Gresham, Oregon. Program coordinator, Don Wardwell, shared with participants the training approach used in the program and some recent changes in the program's structure.

"The role of the service technician is changing dramatically."

BEST program students receive training in the servicing of office equipment, such as computers, electronic typewriters, calculators, dictation equipment and copiers. With the beginning of this school year, Wardwell explained, the program has begun functioning as a business. Students make service calls on campus and perform in-shop service on campus equipment brought in. Students run all facets of the business, according to Wardwell, with students from other programs providing help in areas such as word processing and accounting.

Wardwell described the program-business as one in which students begin as trainees in various skill areas. As each skill is mastered, the student advances to the technician level and

becomes eligible to practice this skill in the business. Advanced technicians work with trainees, eventually becoming supervisors, who demonstrate, coach and monitor the work of other students.

"The role of the service technician is changing dramatically," said Wardwell. In addition to the increasingly complex nature of modern office equipment and the skills needed to service several "generations" of machines, technicians also need a working knowledge of business operations and skill in communicating with office workers at all levels. The BEST program fosters skill development in all these areas, according to Wardwell, making use of teachers from various disciplines around the campus as seminar and workshop presenters.

Wardwell noted that the program also stresses: (1) learning how to learn, (2) accessing material and human resources, (3) developing flexibility, and (4) developing an entrepreneurial attitude.

Participants were very responsive to the program, commenting particularly on Wardwell's enthusiasm and energy.

Research Studies Reveal Traits, Needs of High School Dropouts

Karen Green of NWREL's Literacy and Language Program presented findings from a recent report she co-authored, entitled Promising Practices for High Risk Youth in the Northwest Region: Initial Search. This report serves two basic purposes: (1) to identify the key characteristics of strategies and programs that effectively engage high-risk students in the education process, and (2) to begin to identify promising practices throughout the region which can serve as examples for others to emulate.

The report cites primary reasons for students dropping out of school. Of the various reasons cited by different studies, a 1980 Oregon study identified the following, in order of frequency: teachers, dislike of school, credits, dislike of a specific school, boredom/lack of interest, desire for alternative educational program, and pregnancy.

Green explained that the profile of a high-risk student that emerged from the various studies includes the following characteristics: (1) poor academic achievement (low grades, behind in credits, behind grade level, older); (2) behavior problems, especially truancy, but also including disciplinary problems, attitude, alienation from teachers and the school, and substance abuse; and (3) nonschool problems, including unsatisfactory family relations, need to work, and pregnancy.

Characteristics of programs that were found to contribute to effective dropout intervention, as presented in the report, include the following:

- Staffing--qualified, caring teachers who are able to establish rapport with students
- Curriculum--relevant and meaningful to high-risk students, based on personal experiences, with an emphasis on personal development, and a focus on preparation for work
- Methodology--programs that feature low student/teacher ratio; are individualized in terms of pace, ability, and content; include small group work; help students experience success; have clear expectations and standards, immediate feedback, and clear criteria for evaluating student performance; and are consistent in terms of rewards and sanctions
- Administrative support--including commitment of the district

For those who have decided they want to leave the streets, literacy is a way out.

The second part of Green's presentation focused on what happens to students who "fall through the cracks" of the educational system. Making the Connection: A Report for Literacy Volunteers Working with Out-of-School Youth was funded to

describe the growing problem of school dropouts and to explore ways and help these expanding numbers of undereducated and unemployable youth.

The study was designed to be field-based. Observation and interview data were gathered at youth hangouts and youth-serving social agencies, as well as from professionals providing youth services. Writing samples were collected whenever available.

Findings and recommendations in the report serve to help those involved in outreach programs, literacy and basic skills program planners and developers, tutor trainers, and volunteers to attract and retain out-of-school youth.

Findings related to the literacy skills of out-of-school youth prompted discussion among participants. "Poor literacy skills for many youth," Green noted, "are barriers to participation in most job training programs." For those who have decided they want to leave the streets, literacy is a way out. For those who are committed to the street life, reading and writing are valued only insofar as they are skills that help them function in that milieu.

At least half to three-fourths of dropouts have the ability to complete high school.

To conclude her presentation, Green offered some additional findings related to out-of-school youth:

- Verbal ability among these young people varies widely.
- A substantial portion of these youth are highly intelligent.
- At least half to three-fourths have the ability to complete high school.
- At least 15 percent have learning disabilities, most undiagnosed by the schools.
- White male dropouts have tested intellectually at below average, while white female dropouts and black dropouts have tested at above-average intelligence levels.
- Regardless of their abilities, these youth see themselves as disengaged from the educational process and tend to truancy and course failure, and finally drop out of the system.

Green explained that the project is currently searching for additional funding to develop demonstration sites to incorporate what was learned in the two studies, as well as to develop strategies for providing tutoring for these youth.

Local Partnership Increases Opportunities for At-Risk Youth

Kent McGuire, Senior Policy Analyst, Education Commission of the States (ECS), moderated this session, titled "At-Risk Youth: Oregon's Response." McGuire put the session into context by describing national efforts in response to widespread concern over the growing numbers of at-risk youth. "The family structure has changed," McGuire noted, bringing serious implications for schools. Too many young people, both rural and urban, come from broken homes, are 'latch-key kids,' and are children of young, single, unemployed, and undereducated parents."

McGuire: "The family structure has changed, bringing serious implications for schools."

One effort undertaken by ECS has been the publication of a report entitled Reconnecting Youth. The report looks at the potential of institutionalizing private sector relationships to deal with the at-risk problem. It defines characteristics of the at-risk population on a national level that make this group of young people educationally at risk.

McGuire described what states and cities around the nation are doing to address the complexity of issues surrounding at-risk youth. While some successes have been noted, McGuire was quick to point out that money is often appropriated for at-risk programs without careful consideration of the problem and its implications for schools. McGuire also noted that it is

difficult to extract useful data from the national programs, as there are still many things we don't know, such as why the successful programs are effective and what these programs mean in terms of solving the problem over the long term.

> **Douglas: "The need is for preventive measures, not just remedial ones."**

Marcia Douglas, City-School Liaison, City of Portland, presented The Portland Investment: A Regional Plan to Combat Youth Unemployment. The plan is the result of the efforts of a group of Portland business, education, and local government leaders to counter the serious problem of rising youth unemployment, particularly among disadvantaged youth and racial minorities. This group, called the Leaders Roundtable, is currently working to consolidate fragmented youth employment programs, stimulate private sector involvement in schools, and put their master plan into operation to reduce school dropouts, provide increased employability skills, and provide increased access to jobs, especially for low-income and minority youth. Noted Douglas, "the need is for preventive measures, not just remedial ones."

The Roundtable plan also reaches out to Oregon teacher training institutions to provide future teachers with the skills and knowledge they need to work effectively with at-risk students.

Douglas concluded by stating that the dropout rate of blacks and hispanics has decreased. Said Douglas, "No other urban area has been able to show this result."

> **Barnett: "We can reduce the problem...we have a moral and financial responsibility to do so."**

Sherre Barnett, U.S. Bancorp, presented the Portland Business-Youth Exchange, an effort to help place youth in the marketplace. In Barnett's view, "We can reduce the problem by working with education to aim for a healthier and more productive workforce; we have both a moral and financial responsibility to do so." She continued by discussing the advantages supervisors find in working with youth during their six-week employment experience. These included young people's openness and eagerness to learn and managers' gratification at helping them to grow. And while there are certain disadvantages, such as the time required for training, Barnett pointed out that, in general, businesses are more aware and more responsive than ever to the problem of youth unemployability.

The question and answer period produced a lively discussion in response to the question, "How do you develop common communication among such diverse organizations as schools, legislatures, businesses, and other human service agencies?" Responses included: (1) it has to happen over time; (2) careful planning and good agendas are critical; (3) meetings should start and end on time; (4) individuals must be granted opportunities to get to know each other and to build trust; (5) there must be the freedom to express ideas freely; and (6) it is helpful if there is not a bank of public onlookers each time the group meets.

STEP Program Offers At-Risk Youth Information, Skills, Work Experience

"School dropout rates are alarmingly high," announced Kurt Shovlin, Coordinator of the Summer Training and Employment Program (STEP), Portland, Oregon. Shovlin described STEP as a national demonstration project established to address two major causes of youth dropping out of the school system: educational deficiency and teenage parenting. Shovlin was joined by Tanya Colie, Janice Williamson, and Laura Wyckoff, his co-workers and co-presenters of STEP.

> School dropout rates are alarmingly high.

STEP is coordinated by Public/Private Ventures (P/PV), a private, nonprofit agency in Philadelphia, Pennsylvania, with funds from the Ford Foundation. Seattle and Portland operate two of five national STEP demonstration sites around the nation. In Portland, STEP operates under the direction of the Portland Private Industry Council (PIC) in close cooperation with the Portland Public Schools. Local coordination and monitoring for P/PV are provided by NWREL.

"The importance of the STEP program," Shovlin explained, "lies in its tremendous potential for keeping youth in school, as well as for increasing the employability of youth." The target group for STEP is 14- and 15-year-olds who are both economically and educationally deficient. This group was selected as STEP's target as they are: (1) more responsive to academic remediation, (2) making the significant transition from junior to senior high school; (3) interested in summer jobs but find they cannot compete with older high school students; and (4) in critical need to understand the issues surrounding teenage parenthood.

The STEP program has tremendous potential for keeping youth in school and for increasing their employability.

Four basic components comprise the STEP program: academic remediation, instruction in life skills and opportunities, work experience, and support services during the school year. STEP participants receive minimum wage for their summer employment activities. Over 300 youth participate each summer and about 150 youth participate during the school year.

Shovlin noted that youth participating in the program will be followed until 1992 to determine if summer work experience, coupled with basic and life skills training, can effectively increase high school graduation rates.

During the question and answer period, there was considerable interest in STEP's life skills and opportunities sessions. Presenters explained that the curriculum emphasizes meaningful career choices and decisions, as well as providing sex information as it relates to the risks of teen parenting.

Financial Services Academy Helps Students Expand Choices, Skills

Exploring banking and other financial services occupations and gaining entry-level skills for these fields are activities pursued by students in the Financial Services Academy at Portland, Oregon's Jefferson High School. Jefferson has joined with the Urban League and the Business Youth Exchange to provide exploration and skill development activities for minority and disadvantaged students who might not otherwise have opportunities to learn about or enter these fields.

After a brief presentation by Karenanne Swift on the Business Youth Exchange and its role in the program, Julie Crossley, Coordinator of the Financial Services Academy, gave a presentation on the Academy's purposes and operations.

Crossley began by describing Jefferson High School as an inner-city school with a high percentage of disadvantaged and minority students. She noted that 68 percent of Financial Services Academy students are black and 32 percent are white.

The major objectives of the Financial Services Academy program, according to Crossley, are (1) to retain at-risk youth in the public school system; (2) to increase students' basic skills, attendance and grades; and (3) to give students the skills necessary for long-term, successful employment. After a selection process which takes place during a student's freshman year, he or she enters the program track, which includes academic, career preparation and support services (e.g., personal and/or family counseling as needed). Students learn about banking, accounting, financial planning, stock brokering and other financial services fields. Guest speakers, field trips and other activities complement the student's academic work and help prepare the way for the work experience activities which are built into the program structure.

Program students had higher G.P.A.'s, earned more credits and had better attendance records than comparison students.

Crossley told listeners that the program, now in its third year of operation, is meeting its goals. Relative to a comparison group, program students last year had higher grade point averages, earned more credits and hac better attendance records. Program students also compared favorably with national norms on both reading and mathematics tests administered last year. Crossley concluded her presentation by

stating that the Financial Services Academy is proving to be an effective approach to helping at-risk youth in Portland.

Speakers Review Transition Programs for Special Needs

"Transition Skills for Youth with Special Needs" were addressed by five speakers from various organizations in this standing-room-only session.

Dowling: The number of state transition projects has increased dramatically.

Jane Dowling of the Transition Institute of Illinois began by presenting a chronology of federal legislation related to vocational and special education--from the first vocational education act in 1917 to the Carl Perkins Act of 1984. Dowling said that in the past year there has been a dramatic increase in the number of state transition projects. There are now 139 such projects across the country.

The Transition Institute was established to assist in evaluating and assessing the impact of transition programs. The Institute has five objectives: (1) to provide technical assistance to transition projects; (2) to collect and analyze data from projects; (3) review and synthesize literature about transition; (4) to foster communication between transition projects; and (5) to conduct a program on evaluation research.

Stephen White, coordinator of the Great Falls (Montana) Transition Project, said that the project's goal is to enable disabled youth to access adult services and work within the least restrictive environment. He said that interagency cooperation is the key to maximizing training and employment opportunities for this group.

Individualized Education Programs (IEPs) were the primary focus of Gwen Rockwell's presentation. Rockwell's Project TROPHY (Transition Research on Problems of Handicapped Youth) team conducted a literature review on IEPs and found that most IEPs are "technically unsatisfactory." They do not promote functionality in a nonschool environment, and they do not promote generalization skills to help students transfer school skills to a nonschool environment.

Since teachers do implement 93 percent of IEP goals when the objectives are clearly stated, however, Rockwell believes that IEPs have great potential as vehicles for facilitating transition.

We need to train our teachers to write IEP goals, in Rockwell's view, and we must see to it that regular vocational education objectives appear in the IEPs.

Carol Richardson of Organizational Architects, a privately owned human resource management firm, said that the goal of their program is to assist students with mild learning disabilities in transition from school to postsecondary employment. Students participate in a specially designed community college vocational program in which the business community plays an active role as an onsite training center.

Gill: Special and vocational education together can be more effective than either one alone.

The final speaker was Douglas Gill, Director of the Pierce County Cooperative. Gill said that the cooperative brings together special and vocational educators to share their concerns, goals and problems, as they seek to help postsecondary handicapped learners develop job skills in 12 participating school districts.

The cooperative is based on five principles: (1) special and vocational education together can be more effective than either alone; (2) the expertise found in special and vocational education needs to be appropriately consolidated; (3) districts make more progress working together than alone; (4) special and vocational educators at both the district and building levels need to communicate regularly; and (5) special and vocational educators are more alike than they are different.

In the future Gill believes there will be: (1) an increase in vocational planning at an

earlier age; (2) an increase in vocational planning, both formally and informally, between vocational and special education staff; (3) more definitive IEP indicators regarding content; (4) increased enrollment in postsecondary vocational and teacher education programs; (5) increased emphasis on vocational education at an earlier age; and (6) a change in the role of special education from that of a primary service provider to a secondary or supplemental service provider.

Career Redirection Problems, Needs, Resources Highlighted

Pat Justice-Green set the stage by noting that society generally--and certainly the world of work--have changed dramatically. With these changes have come changes in the stereotypical "Father Knows Best" family structure--to the extent that this structure ever really existed. Many jobs are disappearing, never to return. Job retraining and career redirection is being forced upon us.

Michael Hibbard and other researchers from the University of Oregon discussed findings from 1200 interviews conducted this year with households in six timber mill-dependent Oregon communities facing mill closings. They found that these communities are worse off than predicted, and that the romance with the timber industry in these small towns is gone.

People will pay for economic development at the local level.

Of the 1200 households interviewed, the researchers found that:

- 24 percent had at least one member indefinitely laid off.
- 44 percent were having trouble meeting expenses.
- 80 percent felt economic diversification was very important.
- 70 percent of retired people intended to stay in the community, while only 50 percent of working people said so--even though nearly all said they would like to stay.
- 65 percent supported spending more money for economic development, and 50 percent supported spending more money for increased planning. Hibbard noted that these attitudes toward fiscal spending are not typical of Oregonians.

In general, the researchers have found that: (1) state and national urban areas are doing relatively well compared to rural areas; (2) resource-based economies (e.g., timber) are not doing well; (3) society is becoming two-tiered economically--from the family income level to the national level; and (4) since 1979, 90 percent of timber jobs in Oregon have disappeared, and 25 percent of the mills have closed.

What can people in these communities do to better their situations? The researchers noted three options: (1) people can leave to find work; (2) industry can be courted to move in; or (3) the community can take up production of items previously imported.

The third option seems to be the most attractive to many communities, according to the University of Oregon investigators. In such cases, goods which have been produced elsewhere and imported into the community for further manufacture or consumption are produced locally instead. For example, the researchers noted, chickens were being imported from Arkansas to a frozen dinner manufacturer near Eugene. A local chicken farmer, whose operation was too small to supply the frozen dinner company, worked out a deal in which he went with the frozen dinner company to a bank to secure an expansion loan. This was done on the promise that the farmer would then become the company's chicken supplier, thus replacing the import of chickens from outside the area.

A discussion of displaced worker programs led to the following guidelines for these programs to follow in order to be effective. The researchers recommend that these programs need to: (1) view the community as the client;

(2) pay attention to basic industry and manufacturing and not ignore these in favor of service industries; (3) take a comprehensive approach to job development, trying to keep people in the community; and (4) be mindful that people will pay for economic development at the local level.

Referral, workshops, courses and mentoring programs help people find their place in the world of work.

Marge Work from the volunteer-operated Job Opportunity Bank (JOB) talked about the range of clients they serve and services they offer. JOB's main purpose is to support unemployed people through career redirection, referrals and support groups; they are not placement service.

JOB began as an effort to help people find odd jobs while looking for work. Now JOB serves a variety of other functions as well. In addition to a six-week career course, JOB offers support groups for professionals and nonprofessionals. These groups serve as a network for job opportunities. JOB also sponsors workshops on various topics, such as "How to Start Your Own Business." Located in Portland, JOB is operated by the Ecumenical Ministries of Oregon.

NWREL's Nancy Huppertz discussed the mentoring program NWREL has developed. The benefits--particularly to young, minority women--of having a personal and professional mentor were discussed. Mentoring has often occurred informally, but formal programs are increasing. NWREL is currently working on a book which will provide guidelines for businesses wanting to develop mentoring programs.

Computer Model Matches Skills With Career Options

Susan Roudebush, Career Information System User Services Specialist, presented a description and demonstration of MICRO-SKILLS. MICRO-SKILLS is a software program developed through the California Career Information System and is offered through Oregon and Washington Career Informations Systems. Intended for use on microcomputers, MICRO-SKILLS is IBM compatible.

The purpose of the program is to match the skills the user would like to apply in future employment with a listing of jobs in which those skills are needed. A listing of jobs is provided by the computer program, as is a more detailed description of any of those jobs listed. The system costs about $550 and is available only to CIS members. A small user fee also is charged.

Those in attendance were invited to fill out skill assessement worksheets and have the computer program calculate job matches. The system worked well and created considerable interest among those present. The Oregon version of the program has been supplemented with job information particularly associated with Oregon industries e.g., timber.

Cooperative Work Experience Offers Classroom, On-the-Job Learning

Presenters at this session described cooperative work experience education at the secondary and postsecondary levels, calling it a significant approach to acquainting students with the realities of the work world. Melora Battisti, Training Coordinator, represented Northwest Cooperative Education Center, Highline College, Seattle, Washington. Locally, Lynn Geis represented the Portland Community College Cooperative Work Experience Program, and Gentria Sipp represented the Portland Public Schools program.

The presenters described cooperative work experience as providing alternating or parallel periods of classroom study and supervised employement in which: (1) there is a written learning agreement between student and employer; (2) the work experience is related to a student's classroom study, educational or career goals; (3) the rotation between classroom study and work is planned and supervised to further the student's education and employability; and (4) the achievement of specific learning objectives is based on job-related experiences supplemented by teacher-student conferences, instructional seminars, teacher work-site visitations and other assignments.

Presenters discussed four important values associated with cooperative work experience. First, education and work are applied learning. Students are placed in jobs and enrolled in related classroom instruction. They gain an understanding of the occupational environments of employers, employees, customers and clients.

Cooperative work experience students have higher placement records, make better informal decisions, and show greater satisfaction than comparison groups.

Analysis of job situations takes place in the classroom setting. Second, career abilities can be identified. Students recognize personal abilities and future interests. The work environment provides opportunities for acquiring technical knowledge, familiarity with current practices, and goals clarification. Third, the classroom is extended. Students get an understanding of specific jobs and their training or coursework requirements. Lastly, employment planning is enhanced. Presenters pointed to statistics which show that participants have higher placement records, make better informal decisions and show greater job satisfaction than comparison groups.

The presenters noted that the advantages of cooperative work experience for students include: application of classroom learning, specific skills training, improved transition from high school to college or from college to employment, development of a feeling of responsibility, and an understanding of the work/business world. Some of the employer advantages include: trained employees, a source of experienced and motivated future employees, reduction in costs of recruiting personnel, and a direct return on the tax dollar.

Labor Market Trends Affect Apprenticeship Programs

"What's New in Apprenticeship?" Jeff Triplett, Assistant Director of the Oregon Apprenticeship and Training Division, provided some answers to this question during this informal session. Triplett noted that apprenticeship, in one form or another, has existed since the beginning of the human race, with skilled people passing their know-how on to beginners and working with them to develop their capabilities. While the basic structure of apprenticeship has not changed, Triplett pointed out that present and future changes in the employment market will have implications for the operation of apprenticeship programs.

Triplett: The trend is for employers to want employees with well-developed cognitive and reasoning skills.

He cited a publication titled Work Force 2000, which offered predictions based on current national trends. These included that, by the year 2000: 47 percent of the work force will be women; (2) the representation of minority and immigrant people in the work force will also increase dramatically; (3) approximately 90 percent of workers will be in some form of service occupation; and (4) only eight percent of workers will be involved in manufacturing. Triplett also noted that the present trend is for employers to want employees with well-developed cognitive and reasoning skills.

Within this context, Triplett and session participants held a discussion based on the question, what can we as service providers do--and what should we do--to respond to these changes and meet the demands of tomorrow's employment market? Participants talked over the notion of apprenticeship programs granting acknowledgement/credit for courses taken. They also discussed the difficulty people often experience gaining entry into apprenticeship programs. Triplett reminded participants that there are over 180 groups in Oregon alone which oversee apprenticeship programs and that these programs all operate differently; he encouraged those present to investigate these. He also told participants that representatives from his division are available to see individual students or serve as speakers.

Complex Issues, Strong Feelings Surround Drugs/Alcohol in Workplace

When, how and with whom drug testing should be conducted is currently a hot social issue--one which gives rise to many legal, moral and

emotional concerns. Panelists discussed several aspects of the drug testing issue during the session titled "Drugs in the Workplace: What the Private Sector is Doing." Panel members included Rick Van Cleave, an attorney with the Portland firm, Spears, Lubersky, and two representatives from the employee assistance field, Myra Gibson of The Human Resources Group, Inc., and Frank Picard of West Metro Counseling Professionals.

Van Cleave: An estimated $100 billion productivity loss is incurred each year due to alcohol- and drug-related problems.

Van Cleave represents client companies who want help with problems of drugs and alcohol in the workplace and who wish to conduct drug screening of present and/or potential employees. Van Cleave spoke of the increase in recent years of drug use in society generally and in the workplace in particular. He noted that an estimated $100 billion productivity loss is incurred by business and industry each year due to alcohol- and drug-related accidents, absenteeism, tardiness and reduced productivity.

Van Cleave pointed out that employers are increasingly involved in carrying out urine screening tests on job applicants. Such tests identify the presence of opiates, barbituates, cocaine, marijuana, amphetamines and other substances. Modern "designer drugs" are more difficult to identify. Pre-employment screening normally does not include screening for alcohol.

Screening of employees generally occurs only when there is "reasonable suspicion" on the part of supervisors that the employee is impaired by drug or alcohol use. In such cases the employee must submit to a urine test or be discharged. If the urine test is positive for drugs or alcohol, the employee is required to take a blood test which, if positive, usually results in dismissal. Union arbitrators are frequently able to help the employee keep his/her job if he/she is willing to enter a treatment program. Some companies allow discharged employees to remain covered by company health insurance for four to six weeks, so that they can seek treatment. Van Cleve noted that more and more companies now test employees involved in on-the-job accidents.

Van Cleave said that drug and alcohol screening are sometimes opposed on grounds that screening violates right-to-privacy legislation. He argued, however, that the right to privacy is limited in the workplace (e.g., a bus company has a right to know if its drivers are impaired by alcohol or drugs). He emphasized, however, that information about results of screening should remain private.

Gibson: The burden of implementing company drug/alcohol policies falls on supervisors, many of whom can't or won't carry them out.

The Human Resources Group, Inc. administers employee assistance programs for over 50 companies nationwide. Representing this perspective, Myra Gibson gave a brief history of employee assistance programs and then presented a different view of the issues than that offered by Van Cleave.

Gibson spoke of the fear shared by many people that society is returning to the "witch hunt" mentality of years past, where workers are regarded with suspicion, and supervisors are burdened with implementing practices they are often ill-equipped to carry out or do not wish to conduct. Gibson disapproves of random screening of employees, and spoke of the importance of keeping the employee assistance program separate from the drug- and alcohol-testing function within companies, so that employees can seek help from the EAP without fear of reprisals.

Frank Picard traced the history of society's view of alcoholism from the early 20th century notion that it is a moral issue to the present, in which the medical community and a large portion of society now regard alcoholism/drug addiction as a matter of illness, not degeneracy. Picard views drug testing efforts as a giant step backward to the "witch hunt" days of the past, and fears that employees with drug or alcohol problems will be frightened away from seeking help in such a climate. While acknowledging that employers have a right to

expect nonimpaired performance from employees, Picard feels strongly that mandatory drug testing is not the answer.

Picard: "We need a national drug and alcohol policy, but not a punitive one."

Like Gibson, Picard cited reasons that many drug testing programs are unworkable. In addition to the problems associated with supervisor resistance to implementing programs, Picard spoke of the "new market" which testing has created: clean urine samples are now selling on the street for $35-50 apiece.

In Picard's view, many drug/alcohol-testing approaches are haphazard, poorly thought out and damaging. He feels that "we need a national alcohol and drug policy, but not a punitive one."

In the discussion session which followed, several participants inquired about the applicability of private sector models for dealing with drug and alcohol problems in the schools.

Fairly typical is the Beaverton (Oregon) Public Schools' policy: students who are found to be drinking or using drugs, in possession of alcohol/drugs, or under the influence of alcohol/drugs are required to submit to an evaluation. If they refuse, they are suspended for ten days. Participants generally seem to support such a policy, while acknowledging that it is not ideal, since suspension removes the student from a major source of help.

The strong feelings which characterize society's response to drug/alcohol problems in workplaces and schools were echoed by session participants.

Programs Expose and Combat Illiteracy in the Workplace

What is the nature and scope of adult illiteracy in the workplace, and what roles should education and business be taking in addressing the problem? Beret Harmon, Director of Community Schools and Career Education at the Office of the Superintendent of Public Instruction, Olympia, Washington, provided an overview of the illiteracy crisis in America, placing particular emphasis on the problem as it impacts the business community.

Harmon: "More than 23 million adults in America can not read or write well enough to perform the common tasks of everyday life."

Harmon reported that more than 23 million adults in America cannot read or write well enough to perform the common tasks of everyday life. Another 35 million adult Americans are "semi-literate," with basic skills below the 8th grade level. In practical terms, this means that millions of Americans cannot read the daily news, a menu, a road sign or a bus schedule. Many cannot understand instructions on a bottle of medicine, fill out a job application or an insurance form, or read a petition or an election ballot.

While illiteracy creates problems for the individuals affected, it also poses special problems to business and industry. Illiterate employees are a financial burden to companies due to low productivity, workplace accidents, absenteeism, poor product quality, and lost management and supervisory time. In addition, a high percentage of the currently unemployed are functionally illiterate, seriously reducing the pool of competent persons for new hires. And, the promotability and job mobility of many of the currently employed are restricted by lack of essential basic skills. The millions of adult illiterates who cannot qualify for much of the work our technological economy demands also represent a major loss of potential customers for products and services.

A number of strategies and programs are currently underway to combat the illiteracy problem in the workplace. Two such programs are PLUS (Project Literacy, U.S.) and FELT (Federal

Employee Literacy Training). PLUS is a national joint outreach and awareness project conducted by the ABC and PBS television networks and designed to expose the hidden problem of illiteracy in America. In the FELT program, federal employees are encouraged to volunteer their time to teach co-workers to read.

Tadlock: "The functionally illiterate person does not have the skills to do what he or she wants to do."

Delores Tadlock, a developmental education specialist at Yakima Valley Community College, offered another approach to the problem of adult undereducation. In Tadlock's concept of functional illiteracy, "one does not have skills to do what he or she wants to do." Tadlock's practical approach to reading deficiencies is to help learners develop reading skills using the materials from their school courses, e.g., biology.

Diane Mulligan, Director of Portland Community College's Tektronix On-Site Program, offered her perspective on how a business corporation can work with a community college to address the problem of illiteracy in its workforce. The PPC Tektronix Program offers: (1) regularly scheduled ABE and GED courses; (2) customized training classes for managers who supervise large numbers of employees for whom English is a second language; (3) placement testing (ABE, GED, ESL, developmental classess in math and English); (4) academic counseling services; and (5) volunteer tutors.

PCC personnel and Tektronix managers collaborate to screen employees and to place them in appropriate types of training. Mulligan noted that the program has been measurably successful in addressing the illiteracy problem at Tektronix.

Community College Program Teaches Nonreaders to Read "Beautifully"

"Using Vocational Materials to Develop Reading Skills" was the title of a presentation by Delores Tadlock of the Adult Education Program at Yakima Valley Community College, Yakima, Washington. The presentation highlighted both the theoretical basis of the reading program and the curriculum itself.

The program, according to Tadlock, is designed for students who have serious reading difficulties and who often cannot read even simple materials. Based on Piaget's Interactive Constructivist Theory of Learning and the psycholinguistic view of the reading process, the program proceeds from the assumption that people who read inappropriately have misunderstood some aspect(s) of the reading process. For example, Tadlock noted, these students have often failed to understand that information needs to be integrated from many different sources--that phonic cues alone will not enable them to read with understanding.

By using materials with vocational content to teach reading skills, "we get a two-for-one effect."

Tadlock described the program's three components. In the first component the student listens to taped material while following along in the printed text of that material. This procedure is repeated, the material becomes more and more meaningful, and the student becomes able to read the material "beautifully," i.e., smoothly and with understanding. In the second component, the student reads aloud material not previously listened to on tape. An instructor listens, identifies the kinds of errors the student is making, and provides helpful feedback. In the third component the student engages in silent reading of material at an appropriate level of difficulty, and the instructor monitors his or her progress.

The use of vocational education materials was discussed. "Reading is a process; it doesn't happen in a vacuum," said Tadlock. "By using materials with useful vocational content, we get a two-for-one effect." Tadlock uses the Washington Occupational Information System's Read-Learn-Earn series--11 occupational information booklets covering such topics as employer-employee relations, job search, interviews and resumes. Tadlock also suggested some management techniques for program implementation.

Although the reading program is currently used with adults, Tadlock reported having used the program successfully with children as young as kindergarteners and with learning disabled, educable mentally retarded and remedial students.

Northwest High Schools Bridge Gap Between Academic/Vocational Ed

This session explored the issue of how to effectively integrate academic skills such as math, science, English, and social studies with the skills required for work. Vince Ortiz of the Commission for Vocational Education, Olympia, Washington, pointed out that this integration in the state of Washington is taking many forms, ranging from offering equivalent credit to teachers working as teams to make learning more relevant for students.

Matarazzo: CEOs want employees with strong academic and technical skills.

Carol Matarazzo, Vice Principal at Benson High School in Portland, Oregon spoke about the Benson Project. "Benson maintains a very traditional outlook," Matarrazo began. "Basically we teach vocational skills to young people who want to go directly into jobs upon leaving school." The Benson Project was designed as a five-year plan to get staff members in the building to talk to each other. "Lack of communication is the biggest obstacle we face in reaching our goal of academic/vocational integration," Matarrazo said.

Matarazzo reported findings of a recent study showing that CEOs want math, thinking, and reasoning skills in their employees, as well as technical skills. The Benson Project is aimed at broadening the range of teaching strategies employed through the use of a team approach.

Joanne Miksis head of the Home Economics Department at Churchill High School in Eugene, Oregon, described Churchill's approach to offering equivalency credit. "Four years ago," Miksis began, "we started a very careful plan to integrate our vocational program with our academic program." The plan was a result of four areas of concern: (1) knowledge was being received by students in isolation, not allowing them to see the connection of their school work to everyday life; (2) increased graduation requirements were applying pressure to change; (3) the staff felt they really didn't fully understand how students learn; and (4) the staff felt they were not adequately teaching reasoning and higher-order thinking skills.

To earn equivalency credit students have to demonstrate that their acquired skills are the same as in required courses. For example, a class entitled "Food for the Health of It," as well as other home economics classes, meets the health credit; Technology 2001 grants a math credit; a wildlife management class offers a science lab credit; and business classes offer English credit.

The advantages of equivalency credit, as explained by Miksis, include: (1) interdisciplinary teams work closely together; (2) communication has been expanded; (3) vocational education teachers work more closely together; (4) the school is serving a wider range of students; and (5) the staff has been revitalized to explore new ideas.

The Graduation Requirements Project was explained by Jerry Shiveley, Director of Vocational-Technical Education, Edmonds Public Schools Lynnwood, Washington. The project was designed to offer equivalency credit and to deal with the new graduation requirements for the class of 1989.

Shiveley: While reviewing courses for equivalency, some academic teachers were looking at the content of vocational education for the first time.

A curriculum policy committee made up of parents from each high school in the attendance area, teachers, and administrators was actively involved from the outset. During the first year, 56 courses were nominated for equivalency; of these, 42 were selected for cross-crediting. During this process, Shiveley noted, "some academic teachers were looking at the content of vocational education for the first time." The criteria for granting cross-crediting were

clearly spelled out, and an appeals process was installed so if a course is turned down once for cross-crediting, it can apply a second time. Closing his presentation, Shiveley noted that "equivalency is good for offering options to noncollege-bound students."

Elisabeth Schaefle of the Idaho Department of Education presented the Idaho Project, a state-sponsored effort to improve student performance. Five teams of vocational and academic teachers from around the state are currently involved in defining basic skills and then going beyond those to the life skills. Critical to this effort is the improvement of students' self-esteem.

As Schlaefle explained, "the teams are dealing with the whole student." Five schools are now at various levels in their plans to improve basic skills in the various subject areas. Five new teams will be organized to begin in March. Future plans call for linkages with institutions of higher education and the continuation of curriculum development.

The question and answer session focused on the needs of special populations and ways to make equivalency crediting available to college-bound students as well as others.

Two Four-Year Planning Models Help High Schoolers Clarify Goals

It is challenging and vitally important to help high school students plan a four-year program that is cohesive, in compliance with district requirements, and truly prepares them for their next step after graduation. This was the major point of agreement among presenters and participants at the session titled, "Career Planning in the High School: Helping Students Look Ahead." Two approaches to achieving meaningful planning were presented.

Arneson: Every teacher is a career educator.

Dale Arneson, a counselor at Timberline High School in Lacey, Washington's North Thurston School District, began by offering some statements of philosophy: (1) every teacher is a career educator; (2) counselors need to be change agents, "selling" new ideas by helping others to see their value; and (3) vocational issues are at the heart of many young people's needs. Arneson noted that many personal and academic problems can be addressed by "taking the reins of one's future."

Arneson developed ideas for a system and then began to promote them in his school, even though he faced initial lack of interest, support and funds. Major steps in the process of developing the school's Career Planning System were:

1. Conducting a needs assessment
2. Writing a Competency Test for Career Planning
3. Defining objectives
4. Making use of available resources (e.g., materials and helpers to construct a Career Center)
5. Seeking administrative support at all levels, including the district superintendent
6. Making a formal proposal, which included details of how the system would operate
7. Remaining respectful throughout the process of others' "turf" and gaining their support and sense of ownership of the system.

In its present form the Timberline Career Planning System includes a three-week career planning unit, which is incorporated into Pacific Northwest History, a required course for ninth graders. Students are introduced to the system and taught how to use the Career Center, a systematic collection of information resources on career possibilities.

Career planning activities are now built into the school's registration cycle. Students meet with their advisor-counselor every semester and are required to develop and update their four-year plans. In these sessions students

also develop their schedules for the upcoming term with input from their advisors. All school staff serve as advisors for these functions. One-on-one counseling involving every junior and a member of the counseling staff occurs annually.

Arneson presented a slide show on the Timberline system which was developed for use with parents.

High School Planner, according to McKinlay, models and teaches planning skills, as well as providing informational content to students.

Bruce McKinlay, Director of the national Career Information System (CIS), followed Arneson's talk with a presentation on the development and use of High School Planner (HSP), a system which makes use of CIS's extensive information base to conduct four-year planning. The HSP software provides a computerized process for setting goals, developing a plan which relates to those goals, and comparing the plan to school graduation requirements.

McKinlay characterized HSP as a system which: (1) helps students locate information about occupations and postsecondary education/training; (2) provides a framework for planning and decision making; (3) encourages periodic review and revision of plans; (4) is compatible with CIS and other major information bases; (5) appeals to students because of the use of the microcomputer; and (6) provides support materials for teachers and counselors. He stressed that HSP models and teaches planning skills as well as providing informational content to students.

Research Center Invites Districts to Participate in Field Test

A special opportunity was made available to participants in the session titled, "How Your Agency Can Test New Materials: A National Effort to Use Products of Research." Presenter Jay Smink of the National Center for Research in Vocational Education in Columbus, Ohio described several newly developed materials packages and offered participants an opportunity to acquire and try them out.

Smink described the materials as the outgrowth of ideas and practices actually implemented in successful vocational education projects. One of the sets of materials focuses on basic skill development. Its premise, according to Smink, is that "the best way to teach basic skills and vocational education competencies is to integrate them." The basic skills materials provide detailed information on how to accomplish this, with roles delineated for teachers, counselors and others in the program development process.

Smink: "The best way to teach basic skills and vocational education competencies is to integrate them."

The second materials package Smink described is designed to help students make the transition from school to work. Both print and nonprint materials are included, and activities are presented for teachers and counselors to use with students.

Smink described the third package as focusing on adult career transition. It contains materials and activities to help educators develop high-quality postsecondary programs.

Field testing of the materials, Smink said, will take place next year, and participants were invited to apply to the Ohio Center to acquire and test materials on topics of interest to them. There appeared to be a high level of interest in the materials, especially those having to do with integrating basic and vocational skills.

Panelists Share Views on Future of Teacher Preparation

Mike Henniger of the Department of Education at Central Washington University in Ellensberg, Washington, opened the panel by describing a new program entitled Education Week. The purpose of the program is to interest young people in teaching careers.

The program was developed in response to data indicating a significant need for qualified teaching personnel in the very near future.

"Indeed," Henniger emphasized, "the shortage of qualified teachers is already evident." August 18-22 was selected as the date for the 1986 Education Week, with the theme "Excellence in Education." One hundred and fifty young people from around the state attended the program, held on campus at Central Washington University. Support for the program came from a number of business and professional associations.

Henniger: "The shortage of qualified teachers is already evident."

Sophomores and juniors were recruited for the program. Activities during the summer week included major presentations by renowned speakers, small group sessions, discussion groups, and advisor teams.

While successful, Henniger also noted that the program was expensive and required extensive funding from foundations and private corporations such as Boeing and Pacific Northwest Bell to help with room and board for participants. Henniger closed with the announcement that Education Week 87 is scheduled for June 22-26, with a projected attendance of 300 students.

Barr: Four plus one years in teacher preparation and a master's degree is not the answer.

Robert Barr, Dean of the College of Education at OSU/Western Oregon State University, focused on the recommendation in the Carnegie Report to make teacher education a five-year program. He referred to a current movement to require all teachers obtain an academic degree during their four undergraduate years and then enter a fifth year teacher education program, finishing with standard and lifelong certification and a Master's degree. Barr is disturbed by this movement, dubbing it "the detraining of American teachers." He feels what is needed in terms of teacher education reform is a 2.75 GPA to enter the program, basic skills testing, academic majors at the undergraduate level, a national teachers exam, and an extended program of teacher education stemming from the undergraduate work.

Diane Davidson of the Oregon Council on Vocational Education, described the position of the Oregon State Advisory Council on Career and Vocational Education as favoring a balanced academic and vocational program. The state council has adopted 17 recommendations, which they feel are changes that must be made to guide the transit of vocational education into the next century. These recommendations include, in part, that vocational education must: (1) be centered on the learner; (2) be developed based on specific competencies; (3) use a new terminology and philosophy; (4) provide both qualitative and quantitative information to policy makers; (5) be expanded to serve the age group over 21; and (6) use work experience and on-the-job training.

Two Washington Programs Offer Customized Training for Industry

Making it easier for businesses to access the training and technical assistance they need is the objective of two innovative programs in the State of Washington. These were described during the conference session, "Customized Training Resources: A Blueprint for Expansion and Growth."

The Training Network serves as a broker between public sector providers of training and private sector clients.

Susan von Meter Dunn, Deputy Assistant Commissioner of the Washington State Employment Security Department, gave a presentation on the activities of the Training Network. Cosponsored by the Employment Security Department and the State Commission for Vocational Education, the Training Network serves as a broker between public sector providers of education and training and private sector clients.

Washington, like most states, has many agencies and programs which provide training and related services and which, according to Dunn, are often not well coordinated with one another. The Training Network, she said, serves this important coordination function, which results in much more efficient access to needed services for private sector groups.

Dunn stressed that the information and service broker idea is a simple one, but that so far only a few states have a "one-stop shop" like the Training Network. She went on to say that development of this sort of service brokerage requires a generalist who is aware of a wide range of agencies and programs and their service offerings.

Through the Training Network, businesses can access providers of many kinds of services, including veterans training, apprenticeship programs, specialized recruitment, on-the-job training, classroom training and on-site, customized training at the client's place of business.

Washington's Job Skills Program offers creative ways for communities to attract new business.

John Knold of the Washington State Commission for Vocational Education described the Job Skills Program. Supported by state-client matching funds, the program contracts with training providers (usually community colleges) to provide customized training for private sector clients. The program supports the acquisition of the materials, equipment and human resources to provide this training.

Les Parr, Industrial Development Representative for the Ephrata, Washington Port Commission, spoke of his involvement in a particularly successful Job Skills Program effort in Ephrata. A lockmaking company recently moved from Dublin, Ireland to Ephrata, and help in getting the company established was provided through the Job Skills Program. Parr described the program's involvement in helping the company access needed training in metalworking technology through a nearby community college. Offering such training and technical services was described as a highly creative way for a community to attract new businesses.

Leaders Advocate Regional Planning for Articulated Vocational Programs

Nita Crimins, Job Development and Training Services Director for the Oregon Department of Education, presented Oregon's state model for regional planning in vocational education. District and community college planners from each of these 16 state-designated regions have prepared and submitted descriptions of proposed collaborative projects involving schools, vocational education programs, government agencies, and others.

Department of Education vocational educators believe that the goals of increased access to and improved quality in vocational education can be accomplished through cooperative, articulated and regional programs. Those interested in more detail about the planning process are encouraged to contact the Oregon Department of Education.

Smink: "Improve your image; move from 'vocational education' to 'education for employment'."

Jay Smink of the Center for Research in Vocational Education in Columbus, Ohio presented a regional planning case study which took place in Michigan. Smink said that representatives from higher education, the business community and government agencies pursued a long and intense planning process which ultimately resulted in their presenting a number of recommendations to the county for the operation of vocational education programs. These include:

1. Improve your image. Move from "vocational education" to "education for employment."

2. Look at vocational education as beginning in kindergarten and continuing lifelong.

3. Develop cluster programs at appropriate work sites.

4. Involve and gain the support of the community. One strategy used was to identify a community mentor for each student.

5. Improve support programs. One strategy was a mobile van used for student counseling in assessment and placement.

6. Issue "passports" for students--written descriptions of what the particular student has achieved.

7. Develop a strong public relations program to sell the community.

As an example of this last point, Smink showed participants an 11-minute videotape highlighting the Michigan project.

"Project 2001" Looks to Future in Districtwide Change Process

Bob Lehman, Director of Planning, Evaluation and Program Development for the Lake Washington School District in Kirkland, Washington gave a description of his district's long-range planning and change effort: Project 2001. Lehman described this large-scale project as having three major thrusts: (1) to gather the best possible information on what the world is likely to be like in the future; (2) to develop district-wide programs based on the information gathered; and (3) to develop a lasting partnership between education and the private sector.

Lehman noted that the project was named 2001 in recognition of the graduation year of children born in 1983, the year the project began.

If the trends identified by futurists are accurate, what are the implications for education?

Remarking that the technology and events of today were unimaginable only a few years ago, Lehman gave highlights of the year 1965 by way of illustrating how rapidly change takes place. He said that the challenge faced by project planners was to develop a district program that would enable students to be equal to the demands of tomorrow's world.

Futurists have identified attributes of the world of tomorrow which educators must attend to when planning educational programs, said Lehman. The world is moving toward: (1) participatory democracy; (2) global economy; (3) decentralized decision making; (4) self-help, health-oriented culture; (5) human relations reacting to technology; (6) strategic planning; (7) networking; and (8) alternative and multiple options. Of strategic planning, Lehman noted the importance of "knowing what business we're in," and said that educators don't always have a clear view of the goals and intent of the educational process in which they're involved. "It's important," said Lehman, "to have a vision."

In order to get a sense of the employment skills likely to be needed in tomorrow's world, Lehman reported that his district planning group began working with managers of high-tech businesses in the geographical area. Together, they looked at the trends identified by futurists and began asking: if these trends are accurate, what are the implications for education?

The many ideas and recommendations generated by project planners were organized into categories and presented to schools in the district for use in developing their own action plans. Funds were allocated for building-level planning.

Some basic assumptions about educational change have guided the development and operations of Project 2001, said Lehman. In order to be workable and meaningful, change requires: (1) district support; (2) involvement and ownership at the building level; (3) emotional as well as rational acceptance; (4) staff training; (5) courage; and (6) some visible improvements early on to keep people motivated.

Asked about his vision of education in the future, Lehman responded that there will be greater use of community resources, increased use of computers, and more integration of the curriculum.

Laboratory Focuses on Education for Tomorrow's Technological World

Educational programs in science and technology, the world of forecasting, the limitations of computer modeling, and factors which can enhance or inhibit creativity and progress--these were some of the main themes of the session, "An Insider's Look at Planning for the Future." The

presenter was Eugene Eschbach, Manager of Innovation and Technology at Battelle Memorial Institute's Pacific Northwest Laboratory (PNL) in Richland, Washington.

Students should be encouraged to take risks, make mistakes, and learn from their errors.

Eschbach described Battelle as a scientific research and development institute with over 7,000 employees. Originally funded by a private fortune, Battelle's major laboratories are in Columbus, Ohio and Richland, Washington, the latter being where Battelle serves the U.S. Department of Energy. PNL performs basic and applied research in engineering development in many areas, such as nuclear energy technology, nuclear waste management and nuclear materials production. PNL also offers a series of educational programs for elementary, secondary, and postsecondary students in Washington and eastern Oregon.

The Sharing Science with Schools program brings scientists and engineers into classrooms to speak on current developments in science and technology. Laboratory research apprenticeships involve high school and college students working with mentors on hands-on problem solving activities. In one program, students explore the properties of different materials--experimenting, creating, designing and building. Students are encouraged to take risks, make mistakes and learn from their errors.

Trend extrapolations and computer modeling have their limitations in forecasting; expert opinion is needed.

Eschbach spoke of forecasting and its limitations. Trend extrapolations of the way things have been are not sufficient for meaningful forecasting, in his view, because the world is changing too fast. Expert opinion must be invoked as well. Computer models can be useful, but their usefulness is limited by the frequently observed errors of model builders, e.g., use of jargon and failure to process qualitative data meaningfully.

Education for today's technological world should, in Eschbach's view, result in individuals who are: (1) prepared to accommodate change; (2) issue-oriented--curious about today's issues and interested in pursuing them; (3) capable of careful observation and recording what is observed; (4) world participants--knowledgeable about events worldwide and able to think in terms of the well-being of the entire world; (5) in charge of their own lives; and (6) aware that physical science has limitations.

Two common occurences hinder creativity and progress, according to Eschbach. One is the practice of people putting down other people's ideas, plans and enthusiasm. Another is paying too much attention to learning outcomes (i.e., the "correct answer") and too little attention to the process of learning.

Private Sector Representatives Share Image-Building Ideas with Vocational Educators, Trainers

How can vocational educators improve the public image of vocational education? Four representatives from the private sector gathered to share their insights in the session titled "Image Building: Lessons for Education and Training from Leading Northwest Companies."

Mark Milleman of Tektronix began by asserting that American industry is in a globally competitive market and fighting for its very survival. "If we think we can survive by getting five percent better, we won't even be a factor in the marketplace," said Milleman. Instead, he said, there has to be an order of magnitude change; that is, we must get seven or eight times better at what we do.

Milleman: "People who are very dependent or very independent will not do well in self-managed environments."

We need to tap far more of the worker's potential, according to Milleman. Unfortunately, management makes use of some practices which limit workers' capacity--highly specific job descriptions, job classifications,

sets of objectives, quality circles and personnel policies and procedures.

In Milleman's opinion, U.S. companies are moving towards self-managed groups, and certain skills and characteristics will be essential to future members of these groups. These skills and attributes--commitment to team, contribution to team, personal energy, motivation, ability to network and influence, interpersonal communication, and decision making and problem solving skills--should be fostered by schools, in Milleman's view. He said that people who are very dependent or very independent will not do well in a self-managed environment.

Bill Peare, Vice President of Operations at Horizon Air, said that Horizon struggles to maintain a positive image in an industry fraught with unexpected obstacles. "We're in a no-win situation when it comes to service," he said, citing factors such as weather conditions, overbooking, safety precautions, and smoking vs. nonsmoking.

Peare: "There's no second chance to make a first impression."

Horizon's employee training helps build a positive image by emphasizing customer relations and service. "We also spend a lot of time on appearance," said Peare. "We tell our employees that there's no second chance to make a first impression."

He said that Horizon seeks employees who are willing to make a commitment--to be punctual, dress appropriately and follow through on improving their education; they need employees who take pride in providing a service; and they need employees who want to grow through further schooling or participation in professional development programs.

Steve Hanamura, president of the Portland chapter of the American Society for Training and Development posed three questions: What kinds of images are there? What do you want these images to do? How can you move these images from one mind to another?

He suggested that there are three kinds of images: negative images, images related to a need to belong, and images related to professional competence. He said that people want to use images to change other people's ideas, communicate one's own thoughts, or create a vision of how things should be. Understanding other people's cultures, listening and caring, according to Hanamura, can help to move images from one mind to another.

Davidson: "The strongest selling point of vocational education is its ability to motivate kids."

Diane Davidson, Medford, Oregon school board member and a member of the Southwest Oregon Private Industry Council and State Council on Vocational Education, said that vocational educators must be able to define vocational education and clearly communicate its importance to the public to "create an urgency". Davidson believes that the "strongest selling point of vocational education is its ability to motivate kids."

Town Hall Meeting Generates Ideas for Work Now and in the Future-4

Work Now and in the Future-3 closed with a "Town Hall Meeting"--an audience-participation session intended to recap and wrap up this year's activities. Unusually well-attended for an end-of-conference event, the meeting was moderated by Kent McGuire from the Education Commission of the States in Denver. Its purposes were to review conference themes and activities, discuss unresolved issues, and make recommendations for topics to be explored in future conferences.

Eschbach: We need more challenge, disagreement, dynamism...less politeness and passivity.

Larry McClure, Director of NWREL's Education and Work Program, introduced Eugene Eschbach, Manager of Innovation and Technology Development at Battelle Memorial Institute's Pacific Northwest Laboratory in Richland, Washington. He asked Eschbach to share with participants his impressions of the conference, in the spirit of offering constructive criticism to be used in

planning future events. Eschbach found the conference characterized by:

- Too little disagreement in sessions. There was too little dynamism, in Eschbach's view. People were too polite and passive, and there was too little challenge of one another's ideas.

- Too much anecdotal information couched in scientific terms. Anecdotal information is perfectly acceptable, Eschbach said, but it should not be passed off as scientific and factual when it isn't.

- Too many goals. In Eschbach's experience, "multi-attribute goals" are a setup for failure. Those projects which are most successful are those with a small number of goals.

- Too many consultants. Eschbach described consultants as being unwilling to be completely candid or draw attention to unpleasant truths out of fear that they won't be rehired.

- Too few constructive critics.

Participant: We need time to sort out what we've learned at this conference.

McGuire then invited people to respond to Eschbach's statements or to comment on any other aspect of the conference. Highlights from participants' comments were:

- We need to focus more on instructional techniques. Teachers need to know more about teaching methods.

- We need to study the reasons teachers have trouble getting support for implementing new ideas in hopes of changing their instruction.

- We need to do a better job of informing the community, legislators, school boards, etc. about vocational education. Many people, including those who make administrative and financial decisions about vocational education, do not understand what it is.

- We need to communicate to legislators that strong vocational education programs result in a strong economy. (This precipitated a debate about the purpose of education in general and vocational education in particular.)

- We need to have time to sort out what we've learned at this conference and decide what use to make of new ideas.

McGuire and McClure thanked Eschbach and the participant group for their input and invited them to attend next year's Work Now and in the Future conference.

Our Thanks to All Who Helped Make the Conference a Success

NWREL and its cosponsors wish to acknowledge the many individuals and groups who helped make this year's conference a success. In particular, we extend our thanks to:

- Students in the food service program at Portland's Vocational Village High School, who prepared and served appetizers for Wednesday evening's pre-banquet gathering.

- Students from the Clark County Vocational Skills Center in Vancouver, Washington, who baked and served pasteries on both conference mornings.

- The Agency for Instructional Technology, Bloomington, Indiana and the Center for Occupational Research and Development, Waco, Texas for helping to underwrite the costs of the above two projects.

- Students from Portland's Jefferson High School Performing Arts Center who provided musical entertainment at Wednesday night's banquet.

- Bill Daniels of the Northwest Curriculum Coordination Center in Lacey, Washington, who provided free on-line searches to conference participants.

- Representatives of the many cooperating agencies, who served as session facilitators, helped to arrange for

speakers, and assisted with publicizing the conference. Cooperating agencies included:

Business/Youth Exchange (Portland Chamber of Commerce)

Center for Career and Work-Related Education, Seattle

Columbia Pacific Council, Boy Scouts of America, Portland

Hawaii Commission on Employment and Human Resources, Honolulu

Idaho State Council on Vocational Education, Boise

Idaho State Division of Vocational Education, Boise

Oregon Alliance for Program Improvement (OSU), Corvallis

Oregon Apprenticeship and Training Division, Bureau of Labor and Industries, Portland

Oregon Career Information System, Eugene

Oregon Council of Career and Vocational Administrators

Oregon Department of Education, Division of Vocational Education, Salem

Oregon Occupational Information Coordinating Council, Salem

Oregon State Advisory Council for Career and Vocational Education, Salem

Portland Public Schools

U.S. Department of Education, Region 10, Seattle

Washington State Board for Community College Education, Olympia

Washington State Commission for Vocational Education, Olympia

Washington State Council on Vocational Education, Olympia

Washington State Superintendent of Public Instruction, Olympia

Washington Vocational Association, Olympia

WOIS/Career Information System, Olympia

Work Experience Coordinators of Oregon

Participant Evaluations Identify Conference Strengths, Weaknesses

What were the strengths and weaknesses of the conference? What speakers and sessions were particularly helpful? And what topics do participants want to pursue at next year's Work Now and in the Future conference? These and other questions were asked on the evaluation form provided to participants in their conference packets.

Highlights from the full evaluation report provide a sense of participants' response to this year's conference and their preferences for activities next year.

The three conference speakers receiving the most enthusiastic participant response were Harvey S. Long, who spoke about technology in the workplace of the future; Dee Dickinson, who discussed "multiple intelligences" and lifelong learning; and Leno Pedrotti, who shared with participants features of the applied science curriculum, Principles of Technology. Of the sessions, participants gave the highest ranking to "Automation in the Workplace: What Do Education and Training Specialists Need to Know?"

Respondents were asked to identify the major strengths of the conference. The most frequently cited responses, in order, were: (1) speakers; (2) variety of subjects, (3) organization, and (4) the chance to interface with different groups. Weaknesses cited were: (1) not enough space for meetings/dining; (2) some speakers were off-track, disorganized, etc.; (3) some sessions were disorganized; and (4) the two-hour sessions were too long. There were nearly twice as many responses to the question about strengths as there were to the question about weaknesses.

"What speakers or theme topics would you suggest for a 1987 conference? Most frequent responses to this question were: (1) begin the conference with speakers from business and industry, (2) futurists, and (3) more information on technology awareness/education in the lower grades.

Respondent: "Attending this conference helps me to better understand national priorities and directions."

Finally, the evaluation form invited "satisfied participants" to give a brief statement of their overall response to the conference, which might be used to publicize next year's conference. Many "quotable quotes" were received, among them:

"Attending this conference helps me to better understand national priorities and directions."

"An excellent conference on the cutting edge of new directions and innovations."

"Pertinent, up-to-date, interesting"

"An excellent example of bringing together education and the changing world of technology"

"A marvelous selection of sessions to choose from..."

"Excellent, timely, well located and well planned"

"The place to connect and reflect"

"This kind of conference is essential if educators are to bring about the necessary changes to make public education relevant and realistic. Every state politician and school district administrator should attend this conference every year."

Review of the input received has been very instructive and will be applied to planning for future conference topics, speakers and facilities. We wish to thank all those who took the time to complete and submit evaluation forms to us.

Vendors Display Diverse Resources

Throughout the conference, vendor displays were set up, representatives were available, and demonstrations were provided. In the well-attended display area, conference participants learned about new technologies and gathered information on conference-related themes. Vendor exhibits were arranged for by the Oregon Council of Career and Vocational Administrators. Participating vendors are listed below:

WOIS/The Career Information System
1415 Harrison Avenue West, Suite 201
Olympia, Washington 98507
(206) 754-8222

Northwest Vocational Systems
1506 30th S.E., #104
Auburn, Washington 98002
(206) 939-0764

Career Development Software, Inc.
207 Evergreen Drive
Vancouver, Washington 98661
(206) 696-3529

Catbird Seat Co. (Book Vendor)
913 S.W. Broadway
Portland, Oregon 97205
(503) 222-5817

Northwest Curriculum Coordination Centers
Campus of St. Martins
Lacey, Washington 98503
(206) 438-4456

Armed Services Vocational Aptitude Battery
(ASVAB)
Military Entrance Processing
Station
2107 N.E. Columbia Blvd.
Portland, Oregon 97211-1987
(503) 221-2749

School Futures, Inc.
2092 East Main Street
Hillsboro, Oregon 97123
(503) 640-1729

Tektronix
P.O. Box 500
Beaverton, Oregon 97077
(503) 627-2887

National Alliance of Business
427 Skinner Building
Seattle, Washington 98101
(206) 622-2531

Career Information Systems
1787 Agate Street
Eugene, Oregon 97403
(503) 686-3872

CFKR Career Materials
P.O. Box 437
Meadow Vista, California 95722
(916) 878-0118

Audiotapes of Most Sessions Available

Audiotapes of the keynote presentations and many of the sessions are still available for purchase. Ordering information is as follows:

# 1	Dee Dickinson - Keynoter	1 tape
# 2	Dee Dickinson - Workshop (A-1)	2 tapes
# 3	Adult Literacy (A-2)	2 tapes
# 4	Special Needs (A-3)	2 tapes
# 5	At-Risk Youth (A-4)	2 tapes
# 6	Facing Change (A-5)	2 tapes
# 7	Harvey Long - Luncheon	1 tape
# 8	Distance Education (B-1)	2 tapes
# 9	Four-Year Planning (B-2)	2 tapes
#10	Image Building (B-3)	2 tapes
#11	Out-of-School Youth (B-9)	1 tape
#12	Yakima Model (B-14)	1 tape
#13	Year 2000 (B-6)	1 tape
#14	Bellevue Model (B-14)	1 tape
#15	Owen Thompson - Keynoter	1 tape
#16	Leno Pedrotti - Keynoter	1 tape
#17	Communication Skills (C-1)	2 tapes
#18	Workplace Automation (C-3)	2 tapes
#19	Technology Education (C-4)	2 tapes
#20	Drugs in the Workplace (C-5)	2 tapes
#21	Academic/Vocational Connection (C-6)	2 tapes
#22	Paul Glancy - Keynoter	1 tape
#23	Regional Planning (D-1)	1 tape
#24	Teacher Supply/Skills (D-2)	1 tape
#25	Cooperative Education (D-3)	1 tape
#26	Principles of Technology (D-4)	1 tape
#27	Futures Planning (D-5)	1 tape
#28	Town Hall	1 tape
#29	David Marquart - Banquet	1 tape

Tapes are $5.00 each (i.e., $10.00 for a two-tape session), and may be ordered from:

Michael Brewer
QCCS
P.O. Box 11194
Eugene, Oregon 97440
(503) 345-8117

CONFERENCE AT A GLANCE
Wednesday, November 5

8:00 Registration, Coffee and Rolls--Columbian Foyer

Columbian Ballroom

9:00-9:50 Opening Session: Dee Dickinson, New Horizons for Learning

9:50-10:15 BREAK -- Visit vendors in Garden Foyer
Coffee in Garden Foyer and outside Cascade Rooms

10:15-12:30

Garden A-B A.1	Cascade A A.2	Garden C A.3	Cascade B A.4	Cascade C A.5	Garden Foyer
Multiplying Intelligence	Adult Literacy	Special Needs	At-Risk Youth	Facing Change	Vendor Demonstrations

Columbian Ballroom

12:45-2:00 Lunch: Harvey Long, IBM, Speaker

2:15-4:30

Cascade A B.1	Cascade C B.2	Garden B&C B.3	PDX Club B.15	Columbian D B.16	Garden Foyer
Distance Education	Four-Year Planning	Image Building	Reading Skills	2:30 - 4:30 CIS Micro-Skills	Vendor Demonstrations

2:15-3:15

Mt. Adams B.4	Cascade B B.5	Garden A B.9	Jefferson B.11	St. Helens B.14	Garden Foyer B.10
Test Packages	New Apprenticeship	Out-of-School Youth	Customized Training	Yakima Model	Inside Sheraton

3:30-4:30

Mt. Adams B.12	Cascade B B.7	Garden A B.6	Jefferson B.8	St. Helens B.13
Mt. Hood BEST	Summer Learning	Year 2000	Financial Academy	Bellevue Model

4:30-6:00 Visit vendors, no-host cocktails in Garden Foyer
Informal discussions with presenters

Columbian C&D

6:00 OCCVA Banquet: David Marquart, Teacher in NASA Space Program, Speaker

CONFERENCE AT A GLANCE
Thursday, November 6

8:00-9:00 Registration--Columbian Foyer
Coffee and Rolls--Columbian B
Vendor displays--Garden Foyer

	Cascade A, B, C		Columbian C & D
9:00-9:50	Paul Glancy USA Today	or	Leno Pedrotti Center for Occupational Research and Development

9:50-10:15 BREAK -- Visit vendors
Coffee outside meeting rooms

	Cascade B&C C.1	Columbian D C.2	Cascade A C.3	Garden A&B C.4	Jefferson C.5	Garden C C.6	Garden Foyer
10:15-12:30	Communication Skills	Principles of Technology	Workplace Automation	Technology Education	Drugs in the Workplace	Academic/Vocational Connection	Vendor Demonstrations

	Columbian B, C, D
12:45-2:00	Lunch: Owen Thompson, University Corporation for Atmospheric Research, Speaker

	Cascade C D.1	Cascade B D.2	Cascade A D.3	Garden B&C D.4	Garden A D.5	Garden Foyer
2:00-2:50	Regional Planning	Teacher Supply/Skills	Cooperative Education	Principles of Technology	Futures Planning	Vendor Demonstrations

	Columbian B&C
3:00-4:00	Town Hall Meeting, with Tea and Fortune Cookies

4:00 CONFERENCE ADJOURNS